

ESTABLISHED 1880
Representative of
The Hardware, Stove,
Sheet Metal, and Warm
Air Heating and Venti-
lating Interests
PUBLISHED EVERY SATURDAY

AMERICAN ARTISAN and Hardware Record

Address all communications and
remittances to

DANIEL STERN
Publisher and Proprietor
620 South Michigan Avenue
Chicago Illinois

TERMS OF SUBSCRIPTION IN THE UNITED STATES AND ITS POSSESSIONS (Invariably in Advance) ONE YEAR POSTAGE PAID \$2.00
FOREIGN COUNTRIES ONE YEAR POSTAGE PAID \$4.00 CANADA ONE YEAR POSTAGE PAID \$3.00

Entered as Second-Class Matter June 25 1885 at the Post Office at Chicago Illinois under Act of March 3rd 1879

VOL 77. No. 12.

CHICAGO, MARCH 22, 1919.

\$2.00 Per Year.

AS A PROBABLY EFFECTIVE means for hastening the process of economic readjustment, the newly formed Industrial Board of the Department of Commerce is of much interest to every retail merchant. A summary, therefore, of the procedure contemplated by Secretary of Commerce Redfield is here set forth for the enlightenment and judgment of our readers. The Secretary of Commerce thinks that one of the first steps which the Board should take would be to call into consultation and conference the leaders of industry in such numbers and by such groups as it may be felt is wise. Probably the first of these conferences should be with representatives of industries producing basic materials, such as iron, steel, lumber, textiles, cement, copper, brick, and other construction materials, and from time to time thereafter such others as may be deemed proper. It is believed, however, that industries dealing in finished products will be able to largely (if not entirely) adjust their prices in line with the above policy, without material aid from the committee.

At such conferences the general situation or conditions as they may change up to the time of the conference, should be considered and carefully understood, and the principles which ought to apply and govern the solution of the problems should also be fully understood and appreciated. It is believed that these principles and views will be readily accepted by the great majority of those called into conference and further that if any of those who come into conference question these principles and views, a discussion thereof in the conference will, without any considerable delay, lead to a unanimous acceptance thereof.

In addition to giving assistance to industry in reaching satisfactory price bases, the Board ought to be able to give valuable advice in regard to such questions as the disposal of surplus war materials, it being desirable to accomplish this in such a way as to have as little detrimental effect as possible upon private industrial activities.

It will be the endeavor of the Board to act promptly by consulting and interchanging views with these representatives of industry in the fullest and freest manner possible, with a view to aiding and assisting industry in general to resume activities to the fullest practicable extent. The immediate object is to bring about such reduced prices as will bring the buying power of the Government itself, including the railroads, telephones and telegraphs, into action and make it possible for the Government to state that it is willing to be a buyer for its needs at the reduced prices. If

these conferences result in such an understanding on the part of the Government with respect to the important basic industries concerning proper prices and bases for prices at which purchases may be made by it, and these are approved by the Board, it is believed that upon announcement thereof to the country in general the public will feel justified in promptly beginning a program of extensive buying.

Such a procedure will in substance establish immediately a basis upon which to resume activities, and in this way the law of supply and demand will be enabled to come into play and from that time forward it will control the changes and readjustments in selling prices of materials and the trend of prices, it is believed, will be upward and not downward.

ULTIMATELY, THE RETAILER is the one who is most seriously affected by the curtailment of styles, sizes, and finishes in hardware and kindred products. If, by reason of too great a variety in the same line of commodities, his shelves become overstocked, his rate of turnover is retarded and his income lessened. In the long run, this reacts upon the producer. A reduction of styles, sizes, and finishes, therefore, means an advantage both to the manufacturer and the retailer. As pointed out by the official bulletin of the American Hardware Manufacturers' Association, fewer items mean a great saving of manufactured or semi-manufactured stock necessary to have on hand at all times. The rent for this excess storage space, as well as the interest on the money invested in this slow selling stock, bulks up quite large. Fewer styles simplify shipping and tend to reduce the shipping force. This also holds true in the billing department.

Again, it is estimated that the overhead cost of carrying goods with a slow turnover, largely, if not quite, offsets the percentage of profit that may be realized from them.

The jobber estimates that he will be benefited if the manufacturer puts out well-selected staples instead of the present large heterogeneous line, because he can use his warehouse to better advantage by carrying larger stocks that have a quick turnover, whereas in previous years he has been compelled to take up a considerable percentage of his warehouse with odds and ends of slow selling goods. He also estimates that he can gain a greater average turnover by eliminating the slow sellers and consequently benefits in two ways—his profits are increased, and the financing of his business is made easier.

For practically the same reasons, the retailers, in convention assembled, have, by resolution, asked the manufacturers to reduce to the standard styles, sizes and finishes, the articles that they must place in stock.

In the final analysis, the standardization of goods according to their utility benefits the ultimate consumer, for many of the styles in former years have not been dictated by a study of their usefulness, and many of the finishes were adopted simply to camouflage inferior material in the body of the article.

EVERY TICK OF the clock marks an opportunity. Yet there are dealers who complain about the dearth of chances for profit in the hardware business. Sales are not made every second, it is true. But every second can be made a preparation for sales. Opportunity is the raw material of wealth. Thought and effort are needed to transmute it into coin of the realm. The raw material is abundant. Its obtainment does not depend upon a run of luck. There is nothing fortuitous about it. Any merchant who keeps his mind at work can find a multiplicity of advantages hitherto unutilized. Consider, for example, packages sent out of the store to customers. At no extra cost and with little labor these parcels can be made to carry selling messages. Every dealer has a variegated supply of folders, circulars, and other advertising material given him by hardware and paint manufacturers. Usually such printed matter may carry the dealer's imprint at no additional expense. A profitable way to distribute it is to place an assortment of these folders and circulars in every package which is made up in the store. This is only one of a series of opportunities which are constantly presenting themselves during the course of the day.

FROM EVERY CONCEIVABLE angle of treatment, the subject of business success turns eventually in the direction of individual development through study and application of the principles of salesmanship. In the overwhelming majority of cases, failure is due to neglect of training. The latest statistics make this quite evident. Since Bradstreet's Journal first established the fact that business success or failure is largely personal—in other words, that the individual himself is largely responsible for failure to succeed in business—there has been no higher percentage of personal liabilities established than in the year recently closed. In that year 86 per cent of the failures were classed as due to the individual, and only 14 per cent were charged to extraneous causes. In 1917, 85 per cent of all failures were charged to the individual and only 15 per cent to outside causes; in 1916 the proportions were 81.5 per cent personal and 18.5 per cent non-personal, and in 1915 the proportions were 74.4 and 25.6 per cent, respectively.

Never before 1917 in the quarter century of Bradstreet's experience in this sort of statistical work was the percentage due to the individual himself as high as 85 per cent, the nearest approach to this being 82 per cent, reached in 1910, and 82.3 per cent, reached

in 1890. Fully to understand the above statements, it will be advisable to examine Bradstreet's groupings of the causes of failure proceeding from or inherent in the individual as compared with those outside his control:

Due to faults of those failing: Incompetence (irrespective of other causes); inexperience (without other incompetence); lack of capital; unwise credits; speculation (outside regular business); neglect of business (due to doubtful habits); personal extravagance; fraudulent disposition of property.

Not due to faults of those failing: Specific conditions (disaster, war, floods, etc.); failures of others (of apparently solvent debtors); competition.

IN MANY QUARTERS, Wall Street is symbolic of conservatism of the most pronounced type. In some respects, it may be compared to a highly sensitive seismograph. In the science of physics, a seismograph is an apparatus for registering the shocks and undulatory movements of earthquakes. The instrument is so delicate that it detects vibrations of disturbances many thousands of miles away. Wall Street registers economic upheavals from every part of the globe. A poor wheat crop in Argentina or a revolution in Honduras is enough to cause violent fluctuations in stocks on Wall Street. When, therefore, Wall Street shows signs of optimism, there is good reason for inferring marked industrial improvements over a wide area of operation. Hence, there is much significance in the statement of the Boston News Bureau that Wall Street is shaking off its blue funk. Bolshevism, cancellation, deflation, demobilization, strikes—the aftermath of war—have not barred a rising trend in securities. Some of the most forward looking capitalists, I have reason to believe, are confident these deterrents are discounted.

Their reasons for optimism in the face of general pessimism are the multiplying indications that major ills are allowed for much more thoroughly than is generally recognized. Transition, a financier high up in the Morgan entourage points out, did not start with the armistice, but long before. So securities have an upward trend against developments apparently favorable to the bear. The great mass of investors refuse to believe that the country will not forge ahead to renewed prosperity. Finally, signing of the Peace Treaty, even if delayed well into the year, will, according to the horoscope of thousands of security owners, be followed—even if not anticipated weeks in advance—by an uplift in world history. Thus the menace of potential liquidation, without which the cataclysm alarmists forecast is impossible, is removed.

ONE DOES NOT NEED to be committed to any particular theory or school of thought, new or old, to concede the truth of the assertion that success is primarily a matter of intellect. The trend of mind determines the direction in which one's business moves. The merchant who thinks he is outclassed because his store is small and his sales moderate in number and amount, hobbles himself at the start with the most subtle and

**Mind and
Increase
of Profit.**

difficult of all impediments, lack of self-confidence. If he entertains the thought that he cannot double his income by the use of progressive methods of salesmanship and advertising, he interposes thereby an insuperable obstacle to advancement. He must think success in order to win success. Talent is an affair of training. What one man can do, any other man can do—if he tries hard enough.

RANDOM NOTES AND SKETCHES.

By Sidney Arnold.

A hundred years ago there were no electric lights, no wireless telegraphy, very few bath tubs, no motor cars, fountain pens, airships, sewing machines, phonographs, motion pictures, automatic screwdrivers, telephones, fire escapes, lifts, typewriters pneumatic tires and tools, warm air heaters, sanitary plumbing, wickless oil stoves, bifocal lenses of the kryptok type, high speed tool steel, and transcontinental railroads—to mention a fraction of the comforts and conveniences which are in common use today. Instead of grumbling about petty defects in our times, we ought to turn our thoughts toward the marvels of science and invention which render life pleasant. Reasons for being happy are a thousand times more numerous now than they were a hundred years ago.

* * *

Looking as fit as a wrestler, my friend, F. M. Borden, president of the Borden Stove Company, Philadelphia, Pennsylvania, has just returned from a six weeks' sojourn in Augusta, Georgia, where he played golf to his heart's content.

* * *

To a certain extent it is wise to consider the feelings of an employe when issuing an emergency order, says my friend George T. Bailey of the Oliver Iron and Steel Company, Pittsburgh, Pennsylvania. Sometimes, however, the employe is unreasonably sensitive—like the bride in this tale:

They were on their honeymoon. He had bought a boat and had taken her out to show her how well he could handle it, putting her to tend the sheet. A puff of wind came, and he shouted in no uncertain tone, "Let go to the sheet!" No response. Then again, "Let go that sheet, quick!" Still there was no movement.

A few minutes after, when both were clinging to the bottom of the upturned boat, he said:

"Why didn't you let go that sheet when I told you to, dear?"

"I would have," sobbed the bride, "if you had not been so rough about it. You ought to speak more kindly to your wife."

* * *

My friend Joseph M. Hottel of the Delta File Works, Philadelphia, Pennsylvania, says that envy is often amusing and cites the following conversation in proof:

Mrs. Brown (burning with pride)—How d'ye like my new carpet?

Mrs. Green (bursting with envy)—It's—er—very nice, indeed, Mrs. Brown, for—for brussels. By the way, I nearly forgot what I came for. I wish you

you would lend me your lawn mower for a few minutes.

Mrs. Brown—Lawn mower! Why, certainly. But what on earth can you want with a lawn mower at this time of the year?

Mrs. Green—I wish to thin down our Turkey carpet in the nursery a little; the children are always losing their marbles in it.

* * *

James Doherty of Chicago, Illinois, vice-president Utica Heater Company, likes humor which has a certain degree of subtlety. I enjoyed with him this story on account of that particular quality:

A Washington man, in motoring through Virginia, stopped one day at a toll-bridge he had often passed over, and found there was a new keeper in charge.

"Where's the man who used to act as keeper here?" asked the motorist.

"He's dead, sir," was the reply.

"Dead! Poor fellow! Joined the great majority, eh?"

"Well," said the new man, cautiously, "I wouldn't like to say that sir. He was a good enough man so far as I know."

* * *

Stinginess spoils more business than generosity, says my friend Irving S. Kemp of Vaughan and Bushnell Manufacturing Company, Chicago, Illinois. He illustrates the point with the story of the old man who gave up smoking.

"Why did you give up your pipe?" his pastor asked him. "It was your one comfort, apparently."

The old man sighed and answered:

"No. It wasn't such a comfort after all. You see, if you smoke your own tobacco it costs like the very old Harry, and if you smoke your friends' you have to ram it down so darn tight that your pipe won't draw."

* * *

It is easier to build a house with small bricks than with huge unwieldy blocks of granite. Similarly, with regard to the structure of happiness, it is easier to rear the edifice of gladness with the little joys of every day than to wait for great ecstasies of delight—few and far between—with which to erect it.

The Little Joys of Every Day.

The hearts that seek for happiness
Find many roads and travel far;
Toward distant mountain peaks they press,
And claim the guidance of a star.
While, fair and sweet,
Beneath their stumbling feet,
Unheeded blossoms line the way—
The little joys of every day.

A child's clear laugh, a new-blown rose,
A baby's soft, impulsive kiss,
The whispered words that young love knows—
These may not scale the heights of bliss,
But happy, true,
Free gifts to me and you,
They turn our thoughts from grave to gay,
These little joys of every day.

A bird note in a hushed green glade,
The murmured song of summer rain,
The sun-ripe cheek of country maid,
Deep mellow moonlight on the plain—
Can music, art,
A richer charm impart?
Why do we ever turn away
From little joys of every day?

UP TO THE MINUTE NEWS SIFTINGS

The March Brownback Stove Company, Pottstown, Pennsylvania, will build an addition 100 feet long.

The Benton Harbor Stove Company, Benton Harbor, Michigan, has increased its capitalization from \$100,000 to \$200,000 and will enlarge its plant.

J. E. Ellis and W. V. Robinson of the Independent Stove Company, Owosso, Michigan, are reported to be planning the organization of a new company which will build a plant for the manufacture of warm air heaters.

DOUBLES ITS CAPITAL STOCK.

The steady expansion of its business and the substantial character of its increasing trade have actuated the Cope-Swift Company, Incorporated, of Detroit, Michigan, maker of stove patterns, in making provision for future developments. Accordingly, the capital stock of the company has been doubled, from \$50,000 to \$100,000. This action was taken by unanimous vote of the present stockholders who have subscribed for the majority of the additional \$50,000 of stock.

RETIREES FROM THE STOVE BUSINESS.

Lewis C. Matthews, one of the best known manufacturers in South Bend, Indiana, has retired from active connection with the Engman-Matthews Range Company. This action on the part of Mr. Matthews brings to a close 40 years of active business life, 35 years of which has been spent in the range business. Mr. Matthews will continue in an advisory capacity with the company, but will devote the major portion of his time to private affairs.

He went to South Bend 15 years or more ago, at the solicitation of H. A. Engman, Jr., who was then becoming interested in range manufacturing in South Bend. As superintendent and in charge of production, Mr. Matthews was in a large degree responsible for the upbuilding of the South Bend Malleable Range Company, in which both Mr. Engman and himself were interested at that time.

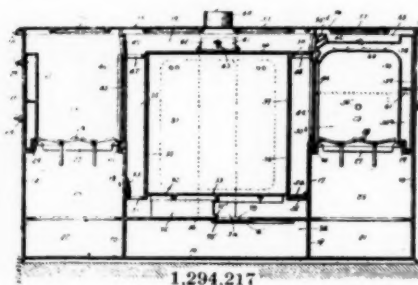
In conjunction with Mr. Engman, he later organized the Engman-Matthews Range Company, and both have given their close attention to the upbuilding of this concern. During the years of this progress Mr. Matthews has been active as vice-president of the concern and was general superintendent until a year or so ago, when his son, Daniel Matthews, succeeded to that position.

In his connection with the range manufacturing business, both in South Bend and St. Louis, Missouri, where he was located before going to South Bend, Mr. Matthews has become one of the best known malleable range men in the country. In fact, he is one of the oldest malleable range builders, in point of serv-

ice, in the United States. Also, he probably has a wider acquaintance among range production men than any one else in the country.

PATENTS A COMBINATION COOKING AND WATER HEATING RANGE.

Joseph Edward Zimmerman, New York City, assignor of one-half to John Zimmerman, Glendale, New York, has obtained United States patent rights, under number 1,294,217, for a combination cooking and house water heating range described herewith:



In a cooking range, the combination with a baking oven, of two fire boxes arranged on opposite sides of the baking oven, and means to cause the products of combustion from either fire box to flow over the oven toward the other fire box and thence downward along the remote side of the oven and along the whole of the bottom of the oven toward the source of heat, said means including a pair of draft regulators below the oven and adapted to oscillate around axes substantially intersecting each other diagonally of the oven bottom.

WATCH THE STOCK PEDDLERS!

Get the names and addresses of all persons and companies offering you speculative or doubtful stocks and securities, particularly in exchange for your Liberty Bonds or War Savings Stamps, with copies of their "literature." Mail them promptly for investigation to the Federal Trade Commission, Washington, D. C.

Immediately upon receipt of such information the Federal Trade Commission will call for full reports in proper cases.

The Federal Trade Commission Act provides a penalty of a fine or imprisonment for those who fail to or falsely report to the Commission.

It may make public so much of the information obtained as may be in the public interest, and it can prevent unfair methods of competition and misrepresentations in the commerce.

Law is not a combination of quibbles and tricks designed to promote dishonesty and sharp practice, but a system intended to compel honesty, truthfulness, candor and fair dealing among men.—Hon. C. E. McLaughlin.

THE WEEK'S HARDWARE RECORD

Of Interest to Manufacturer, Jobber and Retailer

AMERICAN ARTISAN AND HARDWARE RECORD is the only publication containing western hardware and metal prices corrected weekly. You will find these on pages 48 to 53 inclusive.

The Aerial Cutlery Company, Marinette, Wisconsin, is awarding contracts for a plant addition 47x100 feet.

The Gillette Safety Razor Company, South Boston, Massachusetts, has let a contract for a plant addition.

The Steubenville Hardware and Supply Company, Columbus, Ohio, has increased its capital stock from \$75,000 to \$175,000.

Alexander Thomson and Sons, Jersey City, New Jersey, have been incorporated for \$50,000 to make tools. Wallace Thomson, Robert Thomson, and J. W. Thomson are the incorporators.

The J. H. Sayward Company, Incorporated, Haverhill, Massachusetts, has been incorporated with a capital of \$20,000 to make tools, hardware, etc. The incorporators are Daniel J. Hayes, John H. Sayward and Ralph L. Cramm.

AMERICAN HARDWARE MANUFACTURERS' ASSOCIATION BEGINS INDUSTRIAL COOPERATION SERVICE.

With the intention of multiplying the benefits derivable from membership in its organization, the American Hardware Manufacturer's Association announces the establishment of a new department of Industrial Cooperation Service. The following outline of the work under contemplation is given to the trade:

"While the primary object of this association has been for seventeen years to promote friendly relations between the manufacturers and jobbers of hardware who belong to their respective associations, and while in conjunction with this service we have given more or less information to our members on various phases of production, finance and distribution, and have done our part in following Federal and State legislation, so that our influence could be used in modifying such legislation as would be detrimental to our industry, it is thought that with an increase in our working staff we could add to the value of our work by giving information and certain specific service to industrial groups.

"Under the jurisdiction of the Industrial Cooperation Committee—composed of Murray Sargent, Fayette R. Plumb and A. W. Stanley, and with P. H. Robinson as director—the machinery for giving service to industrial groups is being carefully designed.

"Some of the machinery is already set up and is being adjusted to meet the specific requirements of such industrial groups as have agreed to start service.

"There has already come to our knowledge so many practical forms of service for industrial groups as to prove not only the necessity for, but the importance and largeness of, this character of service. Our policy is to perfect our machinery for a certain few classes of group service and gradually enlarge our facilities to carry forward other forms of service.

"Although we are starting for each industrial group such service as it agrees upon as being the most necessary, immediate, or feasible, we suggest for their consideration many other classes of service which we know from the experience of other industrial groups to be valuable and operative.

"While naturally, on account of difference of product and for other reasons, an activity which would be highly desirable for one group may not be of equal or possibly of any value to another group, we feel certain that with our knowledge of the different activities being carried forward by a large number of groups that we are in a position to suggest such a number of activities that will permit any group to select and establish sufficient service to give great value to co-operative effort.

"After consultation with the Government officials and with the large jobbers and retailers of hardware, we have decided to take up, because of their immediate importance, the questions centering around that phase of conservation having to do with the reduction of patterns, sizes and finishes.

"Possibly the most evident value connected with service by an overhead association lies in the fact that its services are clearly of a professional and, therefore, confidential character. There are many factors needed to make up gross totals which necessitate the obtaining of more or less confidential facts or figures from each member of an industrial group. To avoid the natural disinclination of manufacturers to disclose any facts that might inadvertently reach the ears of their competitors, we obtain all facts and figures from members by a special cipher system which positively does not connect their names with the facts given. We take this extra precaution so that each member may feel absolutely sure that such facts or figures as may be given us can not be publicly connected with his firm. We believe, therefore, that service through our association will give greater assurance that suspicion, jealousy and ulterior motives will not gain a foothold in our industrial groups; in other words, if service is conducted through our association a longer life is promised to concerted action.

"Many advantages accruing from service by an overhead association are apparent, but the most conspicuous one is the certainty that the cost of service through our association will be materially less than the cost of the same service if undertaken by separate groups. The volume of work not only reduces per

PRINCIPLES AND EXAMPLES OF GOOD WINDOW DISPLAYS.

WINDOW DISPLAY OF STOVES DRAWS NEW CUSTOMERS TO STORE.

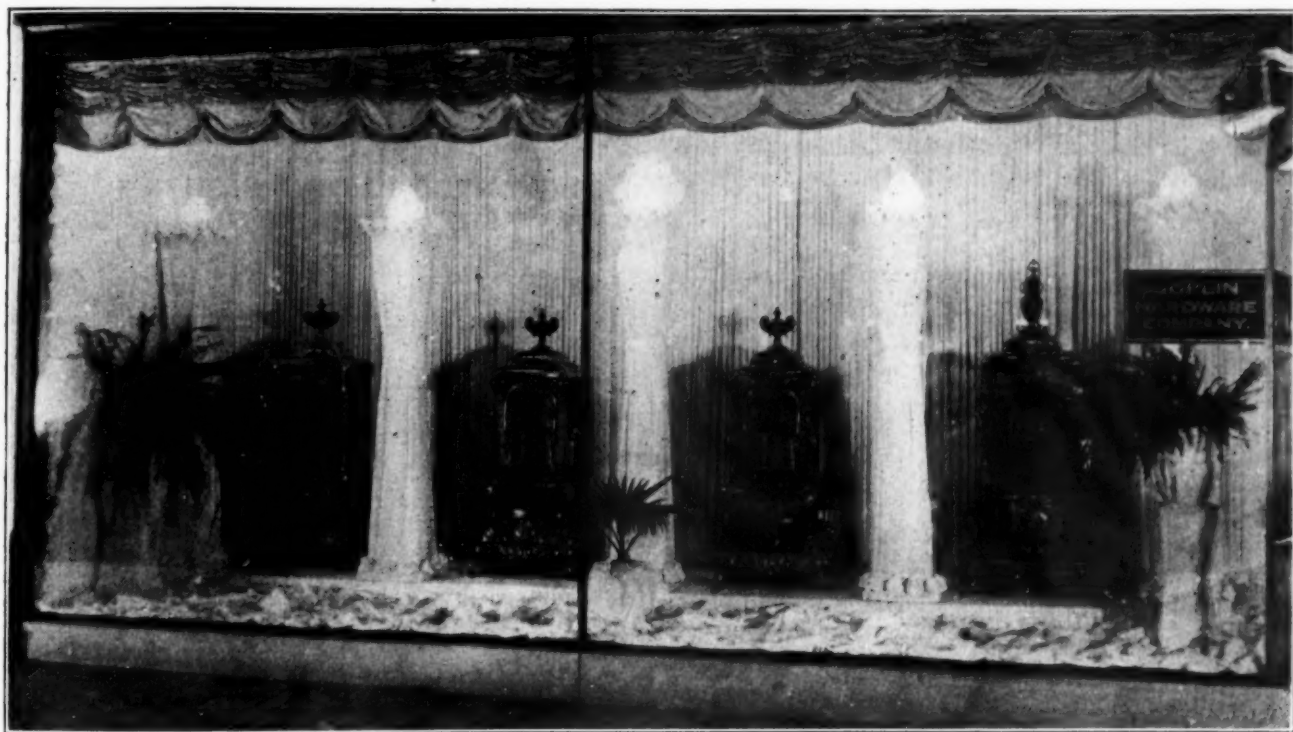
A study of the window display of stoves designed and arranged for the Joplin Hardware Company of Joplin, Missouri, by the secretary of the firm, C. H. Arcularius, shows that the designer appreciates window value. Knowledge of window value is not as common as it ought to be. Indeed, much of the slow turnover in hardware stores is due to the lack of such knowledge. A well-known Canadian hardware merchant brings out the importance of this fact so

average count—Thursday, Friday and Saturday.

"We also know that the largest local newspaper goes into 20,000 city homes daily. Therefore, we have twice as many people passing our windows each day as compared to reading our ads.

"But there is a difference. The passer-by is usually in a hurry, while the ad reader is at leisure. All the more reason the show window should be exceptionally well dressed, and have some attraction strong enough to draw at least 10 per cent of that 55,000 to the window-pane.

"Then what? The story must be told quickly.



Window Display of Stoves, Designed and Arranged by C. H. Arcularius, Secretary of the Joplin Hardware Company, for the Company's Store at Joplin, Missouri.

strongly that it is worth while quoting here his analysis. The conditions surrounding the business of his firm in Hamilton, Canada, namely, the Mills Hardware Company, are not radically different from those which obtain in Joplin, Missouri. Consequently, the conclusions which he deduces are applicable to the window display under discussion; and the principles involved are instructive for everyone who plys the art of window dressing. The merchant referred to, Nelson Mills, says:

"When Woolworth, Rexall, or the United Cigar Stores seek a new location, they take a count of the traffic. Very well, if that method is essential in locating a store, then it must be a valuable asset to the show windows, which are the eyes of the store.

"We know, by actual count, in the month of May, 1918, that a daily average of 55,000 people pass our windows from 8 a. m. to 10 p. m. This is a three day

"There is your prospective customer looking right at a life size article in your window at your front door. The display has done its duty by attracting the customer. How about the card?

"Does a price card tell the complete story, the cost, and does an attractive show card tell the quality and invite him inside? If not, you are the loser.

"So much then for the show window's pulling powers. How about its cost? Last year we spent \$4,000 in advertising to 20,000 people twice a week, while our show windows told the story every day to 55,000 people at a cost of only \$50.00 for the year.

"Therefore, the show window has the best opportunity at the least cost, and we have also noticed far more direct sales results from windows showing a better class of goods at higher prices.

"This proves to me that the newspaper ad has invariably become a bargain column.

"In the foregoing talk, I spoke of the drawing power of the display, which attracted the customer to the window pane. Now, I wish to demonstrate the value of the price card as a silent salesman.

"This humble show card is given a place in the mercantile world second to none as a direct sales medium. The price, quality, and quantity are brought before the prospective buyer and displayed actually on the article offered for sale. How much further could any medium go? A verbal demonstration does not carry the sales message as well. That admits of an argument, and one cannot argue with a show card.

"If its general appearance is pleasing to the eye, and the price is within reach of the purchaser, it immediately conveys a mental resolution to choose that article. The facts are so complete, that desire is at once created and the purchaser goes into the store seeking more information regarding the possible uses of the article.

"Now, the reverse impression is created if the window is poorly dressed, and the card unattractive and soiled.

"One would hardly credit the veracity of any concern that would label a \$50.00 cabinet of silver with the top of a paint box marked with a blue pencil, or use other equally unbusinesslike methods.

"Cheap looking, poorly executed cards convey just the same idea they represent. They make the \$50.00 article look like \$4.98.

"Then we have the display card decidedly important, which is the centre of attraction and tells about the quality, the quantity, and in many cases about an actual demonstration that may be going on in your store. It is a card of invitation, it is the newspaper of your window, and if it is attractive people are more apt to believe its message.

"Then last, but not least, it is the link between your store and national advertising. For example, the card reads, Dear Madam, kindly accept our invitation to step inside and witness an actual demonstration of that well-known O'Cedar mop. Isn't that linking up national advertising? How can any man discredit the value of window cards and price tickets as a sales medium?

"There is only one reason you would discredit it, and that is because you are actually afraid, yes, scared green, that your competitor will see your price.

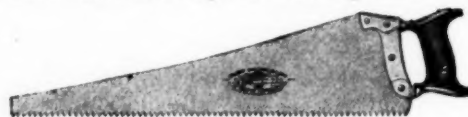
"Gentlemen, forget such folly, and don't be a business 'ostrich,' the other fellow knows your price, even if it is marked in code.

"With the advent of modern lettering pens and the rigger, or so-called one stroke brush, the show card has moved into a class by itself. It is no longer a 'card sign,' it has become an actual sales medium."

PRODUCES SAWS FOR EVERY PURPOSE.

The saws made by Henry Disston and Sons, Incorporated, Philadelphia, Pennsylvania, one of which is shown in the accompanying illustration, are products of many years of experience. This Company makes a great variety of saws in many different designs, and for every purpose for which saws are used. In the manufacture of a Disston Hand Saw, there are many operations, all processes taking place in the factory of

the Company. Crucible steel which is particularly adapted for saw requirements is made in the Company's plant which is specially equipped for this purpose. The material which is to be melted is chosen carefully and skilled mechanics handle the operations from melting to rolling. Before being sent to the saw department, all steel is inspected. All saws are toothed and filed according to the work to be done as the tooth best adapted for sawing soft wood can not be used satisfactorily for cutting hard woods. A

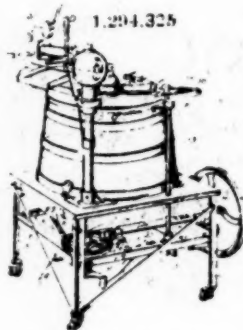


Disston Saw, Made by Henry Disston & Sons, Incorporated, Philadelphia, Pennsylvania.

saw that is "fitted up" for sawing wood has the teeth filed with a bevel back and front, given a proper set, and it is thus enabled to do fast cutting. A hand saw for sawing metal has no set on the teeth but is ground for clearance and filed straight across the front of the tooth. To a limited extent, it would cut wood but not satisfactorily. Dealers should address Henry Disston and Sons, Incorporated (Keystone Saw, Tool, Steel and File Works, Philadelphia, Pennsylvania), for further particulars.

IS GRANTED PATENT RIGHTS FOR A WASHING MACHINE GEARING.

William H. Voss, Davenport, Iowa, has secured United States patent rights, under number 1,294,325, for a washing machine gearing, described in the following:



In a washing machine, a support, a rotary shaft thereunder, a vertical oscillatory shaft, means for operating said oscillatory shaft from said rotary shaft, comprising a crank arm movable longitudinally of said rotary shaft and having a clutch device on one face, and a cooperative clutch device on said rotary shaft, and means to move said crank arm into operative and inoperative position with respect to said rotary shaft.

HARDWARE DEALER SHOULD TAKE PART IN HOME BUILDING CAMPAIGN.

The hardware dealer has a special interest in the home-building movement recently inaugurated. Its success means larger volume of sales of hardware and household utensils. It is well, therefore, for him to know that complete plans, adaptable to any city in the United States, for an effective "Own Your Own Home" campaign, have been formulated by the United States Department of Labor and the literature is now ready for distribution through the Division of Public Works and Construction Development of the Department. Twenty cities already are getting under way with their drives for home building and home owning.

To supervise the formulation of these plans, Paul C. Murphy of Portland, Oregon, for two years work-

ing on "Own Your Own Home" work, was brought to Washington. In consultation with Department of Labor officials and several of the leading authorities on building in the United States, Mr. Murphy has drafted the campaign manual, now available for such cities and individuals as are interested in promoting home owning.

The "Own Your Own Home" bureau in the Division of Public Works and Construction Development will serve as an advisory board to the managements of these local campaigns, where requested, and will extend the fullest cooperation to every city in the country which undertakes a campaign.

Briefly, the campaign plan contemplates a general committee made up of civic and industrial leaders, with someone whose standing in the community justifies his selection, as the chief executive official.

Under this general committee are such subcommittees as have been found essential. The manual suggests the prudence of having vigorous committees on Finance, Publicity and Campaign Methods, Mercantile Institutions, Public Service Corporations, Education, Religious Activities, Industrial Workers and Labor Unions, Hotels and Restaurants, Exhibits and Management of Headquarters, Women's Clubs, Speakers and Meetings, Poster Contests, Civic Bodies, Theaters and Amusements, Transportation and Automobiles, Industrial Plants, Music, Printing and Supplies and Donations.

The function of each committee is explained in detail in the Department's manual together with suggestions on handling specific problems which invariably develop in the "Own Your Own Home" campaign.

In the Department of Labor's plan of campaign the women, churches and labor organizations play an important part. The entire campaign is pitched on a civic betterment plane rather than on a purely commercial basis and the appeal is more on the line of what each business group can put "in," rather than what it can get "out" of the movement. It is a one hundred per cent Greater City movement, having in mind only the incalculable permanent benefits to the community and the immediate helpfulness to the nation during the transition from war mobilization to peace production. The Department of Labor emphasizes these benefits which may be expected from the "Own Your Own Home" movement:

1. It will provide better living conditions, increase efficiency, encourage thrift, give greater comfort and happiness and create individual reserves for misfortune and old age. Every house owner with his family, whether rich, poor, or well-to-do, becomes thereby a better citizen, with increased self-respect, independence and responsibility to the city and nation and is more vitally interested in the welfare and prosperity of both.

2. That during the readjustment period, such a movement hastens the return of normal conditions; results in much needed construction for home and industrial purposes; provides work for returning soldiers and sailors and for labor changing from war to peace industries; stimulates all lines of business in each community, creates general prosperity.

The fact that all these are patriotic in purpose does not eliminate the certainty of their being materially profitable to the local communities and, in the long run, the community which makes it easiest to build and cheapest to build, will reap the greatest material benefits.

Not only has the Department of Labor set out in detail the plan for a successful "Own Your Own Home" campaign. It is preparing publicity matter which is to be placed at the disposal of the local committees and will, where communities can show such action is necessary to the inauguration of the campaign, send an expert to assist in the organizing and getting the movement under way.

The "Own Your Own Home" movement as outlined by the Department of Labor was one of the propositions submitted to the recent conference of Governors and Mayors in Washington, where it met with enthusiastic encouragement and support, many of the Governors and Mayors expressing the determination to return to their districts and interest themselves in getting such campaigns under way.

Requests for "Own Your Own Home" campaign literature should be made to the Division of Public Works and Construction Development, United States Department of Labor, Washington, D. C.

SECURES PATENT FOR TEAPOT AND OTHER VESSELS WITH SIMILAR SPOUTS.

Under number 1,292,569, United States patent rights have been granted to Thomas Wood Bennett, Burslem, England, for a teapot and other vessels with similar spouts, described herewith:



A pot of fragile material provided with a pouring spout having a forwardly curved lip at the front side of its delivery end portion, said spout having also a shoulder extending outwardly around it below the said lip, and having also a flange which projects forwardly from its rear side portion crosswise of its pouring opening and toward the said lip, and a protecting collar of relatively soft material secured around the end portion of the spout and bearing against the said shoulder.

DEMAND FOR WASHING MACHINES IS CONSTANTLY ON THE INCREASE.

The women who entered factory work during the war and who are returning to home and household duties have learned the full value of labor-saving machinery, says a prominent washing machine manufacturer.

"These women," he declares, "have learned that the offices, factories and railroads of the country are equipped with the latest labor-saving devices. They have learned the value and utility of such devices, and have learned how to use them. This knowledge, gained from actual experience, will be taken into every home in which these women, who did so much for their country during the war, enter either as housewives or

household servants. No one can forecast the enormous demand for household labor-saving devices which will exist in this country for the next five or ten years as a direct heritage of the great war."

He predicts that there will be a shortage of domestics for a long time, and the high wages they command will make it necessary for many housewives to do their own washing and ironing, and there will be thousands of women who have been doing war work who will now return to their homes and household duties, and these women, after having taken an active part in business life, will demand the same sort of labor-saving devices for their housework which they found in the office and the factory.

OPPORTUNITIES FOR FOREIGN TRADE PRESENTED BY BUREAU OF FOREIGN AND DOMESTIC COMMERCE.

The Bureau of Foreign and Domestic Commerce through its Special Agents, Consular Officers and Commercial Attachés is receiving information of opportunities to sell hardware and kindred lines in several foreign countries. Names and locations will be supplied on request to the Bureau in Washington or its District Offices. Such requests should be made on separate sheets for each opportunity, stating the number as given herewith:

28696.—A business man in France who is to open an import office in Paris desires to secure an agency for the sale of American products. Reference.

28702.—A man in France is forming a company for the establishment of a department store, hardware, and engineering business, and desires to be placed in communication with dealers in American products. Quotations should be given f. o. b. New York. Correspondence may be in English. References.

28707.—A merchant in Australia wishes to establish a sales agency and to employ salesmen to introduce American products throughout that country. References are given.

28714.—A merchant in Italy desires to purchase and to secure an agency for the sale of door and window hardware, utensils in general, and tools and instruments. Correspondence may be in English. References.

28716.—A commercial agent in France desires to secure the sole agency for the sale of American products to department stores, bazaars, hardware, and furniture stores. Correspondence should be in French. References.

28727.—A commercial agent in France desires to secure an agency for the sale of automobiles and spare parts, tires, and all accessories. Correspondence should be in French. Reference.

28729.—A man in France desires to secure an agency for the sale of machine tools, tools, hardware, etc. Correspondence should be in French. References.

28740.—An importer in Italy wishes to receive an agency and to purchase tin plate. Correspondence may be in English. Reference.

28742.—A member of a firm in Brazil desires to secure an agency and to purchase tin plate and wire. Correspondence may be in English. References.

28744.—An Australian manufacturers' agent is in the United States and desires to secure an agency for the sale of silver-plated ware, brush ware, and kindred lines. References.

28750.—A firm in Switzerland desires to purchase immediately and to secure an agency for the sale of machine tools, agricultural implements, and tools of all kinds.

28749.—A member of a firm in New Zealand is in this country and desires to secure an agency from manufacturers only, for the sale of copper wire (plain and coated), woven wire fencing, steel wire, wire nails, galvanized sheets (plain and corrugated), tin plate, tin steel, machine tools, etc. References.

COMING CONVENTIONS.

Southern Hardware Jobbers' Association. St. Charles Hotel, New Orleans, Louisiana, April 8, 9, 10, 11, 1919. John Donnan, Secretary, Richmond, Virginia.

American Hardware Manufacturers' Association. St. Charles Hotel, New Orleans, Louisiana, April 8, 9, 10, 11, 1919. F. D. Mitchell, Secretary, 4126 Woolworth Building, New York City.

Sheet Metal Contractors' Association of Illinois, Jefferson Hotel, Peoria, Illinois, April 9, 10, 1919. Frank I. Eynatten, Secretary, Peoria, Illinois.

Arkansas Retail Hardware Association, Marion Hotel, Little Rock, May 6, 1 and 8, 1919. Grover T. Owens, Secretary, Little Rock, Arkansas.

The Hardware Association of the Carolinas, Charlotte, North Carolina, May 20, 21 and 22, 1919. T. W. Dixon, Secretary, Charlotte, North Carolina.

Alabama, Florida and Georgia Retail Hardware Associations, Jacksonville, Florida, May 21, 22 and 23, 1919. Walter Harlan, Secretary, Atlanta, Georgia.

National Sheet Metal Contractors' Association, Columbus, Ohio, June 10, 11, 12 and 13, 1919. Edwin L. Seabrook, Secretary, 261 S. Fourth street, Philadelphia.

National Warm Air Heating and Ventilating Association, Columbus, Ohio, June 11, 1919. Allan Williams, Secretary, Columbus, Ohio.

Sheet Metal Contractors' Association of Ohio, New Southern Hotel, Columbus, Ohio, June 11, 12, and 13, 1919. W. J. Kaiser, Secretary, Columbus, Ohio.

Mississippi Retail Hardware and Improvement Association, Agricultural College, July 8, 9 and 10, 1919. D. Scoates, Secretary, Agricultural College, Mississippi.

RETAIL HARDWARE DOINGS

Illinois.

Azby Hardware Company, Chicago, Illinois, have been incorporated with a capital of \$10,000. The incorporators are R. J. McLaughlin, Henry Hakenson and Hardin McLaughlin.

Iowa.

Schaaf Brothers have opened a hardware and implement business at Anderson.

W. C. Brinker has sold his hardware store at Auburn to O. E. Short.

Streeter and Smith Company have bought the stock of the W. B. Smith Hardware Company at Mason City.

J. E. Piersol has sold his hardware business at Rockwell to Max Kruggel.

F. G. Roberts has bought a hardware and implement business at Thurman.

W. W. Wheeler has sold his hardware store at Vinton to Harry and Bert Stitzel.

Kansas.

Cecil Wells has bought the Kimball hardware business at Jewell.

Henry Johnson has opened a hardware business at Hackley.

The North End Hardware Company, Wichita, has been incorporated for \$15,000.

W. S. Meadows will open a hardware store at Gaylord.

Michigan.

L. C. Grill has sold his hardware store at Hubbardston to Charles Brim.

Minnesota.

Amos Gulbrandson has sold his hardware store at Hayward to Carl T. Hulegaard.

Ellingson and Groven, Mentor, have dissolved partnership, Olof M. Groven continuing the business.

P. A. Sanders will open a hardware store at Ogilvie.

The hardware store of McCurdy and Sons, Two Harbors, was badly damaged by fire.

E. A. Siddall, Wells, has sold his hardware store to F. G. Brandt.

H. Hamilton has opened a hardware store at White Bear.

Missouri.

S. M. Simpson, Savannah, has sold his hardware store to Graff and Dorrell.

The Canton Hardware Company, Canton, has been incorporated for \$5,000 by C. E. Bowman and S. R. Staples.

Nebraska.

Brooks and Richards, Atkinson, have sold their hardware store to Harvey Shaw.

C. D. Grim will move his hardware business from Antioch to Crawford.

J. S. Rhein has bought the interest of his partner W. E. Rousey in the hardware business, the new name being the Rhein Hardware Company.

North Dakota.

Frank and H. M. Peterson will open a hardware business at Hebron.

H. E. Bonzer, Hettinger, has sold his hardware store to White Brothers.

Oklahoma.

Smith Brothers, Purcell, have sold their hardware business to R. B. and E. Sheets.

Stockstill and High, Lindsay, have purchased the hardware and implement business of Belyard Company.

Washington.

Peter H. Peters will engage in the hardware business at Waverly.

Wisconsin.

Krostue and Peterson, Albany, succeed the Dixon Brothers in the hardware business.

ADVERTISING CRITICISM AND COMMENT

Helpful Hints for the Advertisement Writer

A well-proportioned, invitingly written advertisement is that of the Steiner and Voegtly Hardware Com-

THE LIGHTNING Bread Knife



of which we have sold hundreds during the past two years, without a single complaint, will be found one of the most satisfactory implements you can place in your kitchen.

Cuts thin, dainty slices of bread without crumbling or waste. Equally good for cakes, etc. It is offered this week as a

Special at 22c

5c Extra Via Mail

STEINER & VOEGTLY HARDWARE CO

OUR GUARANTEE
If you can get it elsewhere
for less return it with buy
it back at full price

230-284
DIAMOND ST
PITTSBURGH

the merits of the knife is more effective than direct claims because it implies actual tests in numerous kitchens. The setting forth of the price in bold figures puts the finishing touch upon the persuasive paragraph which tells the thrifty housewife that the knife "cuts thin, dainty slices of bread without crumbling or waste. Equally good for cakes, etc." This kind of advertising is certain to bring results and add new customers to the list of the store's clientele.

* * *

The advertisement of the Hanscom Hardware Company, which is reproduced herewith from the *Evening*

company which appeared in *The Pittsburgh Leader*, Pittsburgh, Pennsylvania. It contains no extravagant statements, unless it be in the name of the article. Doubtless, the manufacturers of the bread knife are responsible for the use of the word "lightning" as a designation for their product. Of course, this is a preposterous exaggeration. "Quick-cutting bread knife" would be a more reasonable description.

In spite of the handicap of this distorted word, however, the advertisement is forceful and convincing. There is an eloquent suggestion of satisfactory service in the declaration that the firm has sold hundreds of these bread knives during the past two years without a single complaint.

This phrasing of

Gazette of Haverhill, Massachusetts, is typographically attractive. It marches straight into the center of the field of vision. The eye perceives it without conscious effort. The text, however, is marred by the

SKATES

A Large Shipment Just Received

Gillette Razor Blades

Come While They Last

Sleds and Skis Snowshoes

Toboggans Ice Creepers

Ice Fishing Outfits



Hanscom Hardware Co.

30 MAIN ST
HAVERHILL, MASS
The Dependable Store

Telephone 48

Telephone 49

intrusion of a line wholly foreign to the general idea of the advertisement. It will be noticed that the subject of the copy is skates and other related sporting goods having to do with ice and snow. Hence the third line, mentioning razor blades, strikes a false note and distracts the attention.

* * *

KEEP FAITH IN THE PUBLIC.

George Frank Lord says that if the business man who wants to extend his commercial relations with his fellow men truly regards his business as a service to mankind, he will see to it that it renders the best service possible and that his offers of that service through publicity shall be made in good faith. He will realize that the aim and object of his advertising is not to sell goods, but to buy satisfied customers. With such realization, how could he sanction lies, misrepresentations or exaggerations in his advertisements? He would, in fact, not only avoid such false promises of service, but would also state the limitations of the service he offered, to make sure that no customer could become dissatisfied because his purchase failed to deliver all the service promised.

It may strike you as Utopian to advocate that advertisers state the limiting features of their service or products and thereby restrict their sales to those who would not mind such limitations. Not at all! This is really the shrewdest method of doing business.

HEATING AND VENTILATING

OBTAINS COMPETENT MECHANIC.

TO AMERICAN ARTISAN AND HARDWARE RECORD:

Please discontinue my advertisement for help in your valuable paper. Your classified columns certainly bring results. I have obtained a competent mechanic through your journal. This is not surprising to me, however, because I realize that you number the best workmen among your readers.

Yours truly,

J. R. EVERROAD.
Warm Air Heaters.

Columbus, Indiana, March 16, 1919.

GIVES CONSTANT SUPPLY OF WATER FOR HUMIDIFYING PURPOSES.

In the accompanying illustration is shown the Haynes Automatic Valve connected to the ordinary water pan of a warm air heater. This humidifier valve is guaranteed in every way by the manufacturer, Haynes of Kansas City, Missouri. The valve is extremely simple and for that reason is said to be



Haynes Automatic Valve, Made by Haynes, Kansas City, Missouri.

practically fool-proof. If the washer gives out, it is not necessary to disconnect the water pipes as the washer may be renewed by removing two screws which hold a small lid in place. The valve and water pan may be drained during the summer months by loosening the lid of the valve body. The water may be turned off permanently by just removing the weight from the valve arm. Therefore, it is not necessary to install an extra stop cock for this purpose. The valve does not depend upon a float for its action. On one end of a rocker arm, there is a small water weight tank and a cast iron weight on the other end. As the water in the pan rises it backs up in the small cone-shaped tank, and this tank, becoming heavier than the weight, shuts down and closes off the water. The port between the valve tank and the water pan is always open. Consequently, when the water evaporates from the pan, it flows out of the water weight tank maintaining its level. Then the tank becoming lighter than the weight, rises and allows the water to flow in from the city main. The valve is not affected by the heat as no hot water touches it and the gasket will last much longer for this reason. For further particulars address

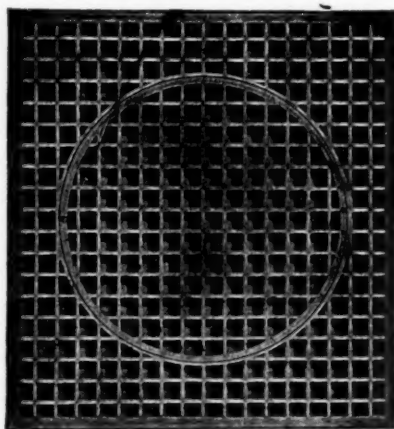
Haynes, 2429 Independence Avenue, Kansas City, Missouri.

CHARGE A GOOD PRICE FOR YOUR WORK.

Many things are necessary to success in the warm air heating business. Chief among them is getting a good price for good workmanship. Some years ago, Clarence M. Lyman of Utica, New York, gave it as his conviction that one of the common mistakes of the ambitious journeyman when he becomes a contractor is to start in with the idea that he is doing well if his work nets him a journeyman's pay. No more fatal blunder can be made. It would be better for him to let some other contractor have the worry of keeping the Saturday pay envelope full than to attempt to establish a business of his own on so frail a foundation. Every warm air heater dealer and installer should charge a good price for his work. If it is good work with good material, it is worth good pay.

IMPROVES THE HEATING SERVICE.

Depicted in the accompanying illustration are the Duplex Gratings made by Tuttle and Bailey Manufacturing Company, New York City. These gratings are for pipeless warm air heaters and as implied by their name, are designed to give double the amount of service of the old single type of grating.



Duplex Gratings, Made by Tuttle and Bailey Manufacturing Company, New York City.

They are durably constructed of high grade material and much care has been taken to bring them up to their present high standard. They are carried in sizes from 20x22 to 45x45 to correspond to collar sizes from 14 to 36. While it is known that pipeless heaters give satisfactory service within certain limitations, it is unwise as well as detrimental to the best interests of the trade to claim for them a degree of performance for the accomplishment of which they are wholly inadequate. They have been extensively used instead of base burner stoves in many houses and reports from various sections of the country show them to be in great demand. It is good policy for the installer of pipeless warm air heaters to neglect no effort to make them give the best service possible and in just such instances

are the Duplex Gratings very appropriate. Price lists and other particulars may be obtained by addressing the Tuttle and Bailey Manufacturing Company, 52 Vanderbilt Avenue, New York City.

MANY A LITTLE MAKES A MUCKLE.

Benjamin Franklin was not only an apostle of thrift; he was a prophet, the forerunner of the great savings campaign the Government today is conducting. If he were here today it would not be difficult to picture him as saying: "And also remember, friends, in this great savings campaign now on, that many a little makes a muckle, so to speak. Save all your jitneys and buy Thrift Stamps with them. You will be surprised how soon you will have enough of them to exchange for a War Savings Stamp, which soon, by consistent saving and thrift, will grow into a score of them and either add to your bank account or start you on the road to wealth."

MAKES ACCURATE CASING RINGS.

A very important part of the warm air heater is the casing ring. To be of the greatest possible value it must be air tight and made of serviceable material. The Walworth Run Foundry Company of Cleveland, Ohio, makes steel casing rings, as shown in the accompanying illustration, of individual measurements and requirements. These rings have lugs for double casings and are also made without lugs for single casings. They are manufactured in full circles or in partial circles for cast fronts. The manufacturers guarantee these rings to be exact in measurement and true in circumference, and as the Walworth Run Foundry Company is known throughout the trade for its high



Steel Casing Ring for Warm Air Heaters Made by The Walworth Run Foundry Company, Cleveland, Ohio.

grade products, dealers need have no hesitation about writing for detailed information. Prices are furnished upon application and catalog and literature may also be secured by writing to the Walworth Run Foundry Company of Cleveland, Ohio.

SOCIAL PROGRESS DEPENDS ON PROFIT.

That the business organization constantly grows more closely cooperative is not to be questioned, nor is there any reason for setting bounds to this natural progress. The joint stock company is a very practical form of cooperation and the most progressive corporations seek the largest possible distribution of their stock among employees. The profits of owners and proprietors, where they exceed living expenses,

are returned to industry for its development, thus serving the joint interests of owners, employees and consumers. There could be no industrial progress without profits, and large profits, although generally viewed with such disfavor, result in more rapid industrial and social progress.

IS EQUIPPED WITH DIVING FLUE.

The Torrid Zone Steel Warm Air Heater, shown in the accompanying illustration, which is manufactured by The Lennox Furnace Company, Marshalltown,



Torrid Zone Steel Warm Air Heater, Made by The Lennox Furnace Company, Marshalltown, Iowa.

Iowa, is riveted into practically one piece without packed joints and is said to be smoke and gas tight. This heater is made of high grade, open hearth heavy steel plates. It burns gas, smoke and soot. Consequently it does not require frequent cleaning. Its heating surfaces are vertical and allow no accumulation of ashes and soot. The diving flue of the Torrid Zone heater is a device by means of which a maximum amount of heat is obtained from the smoke before it escapes up the chimney. In this heater, the smoke leaves the main body or steel shell of the heater and enters the diving flue at the top. At this point it can pass by a direct draft to the chimney pipe and should be allowed to do so when the fuel doors are open. When these doors are closed the damper should be closed by means of an iron rod just above the heater door. Then the hot smoke is forced to pass to the bottom of the diving flue under a hanging partition and back again to the top. In this process the smoke travels eight feet before it enters the smoke pipe. The grates rock like a locomotive grate, which is very simple. Dealers should address The Lennox Furnace Company, 200 Lincoln Highway, Marshalltown, Iowa, for further particulars about this heater.

The saying that "man wants but little here below" probably was suggested by the fact that that is what he usually gets.

PRACTICAL HELPS FOR THE TINSMITH

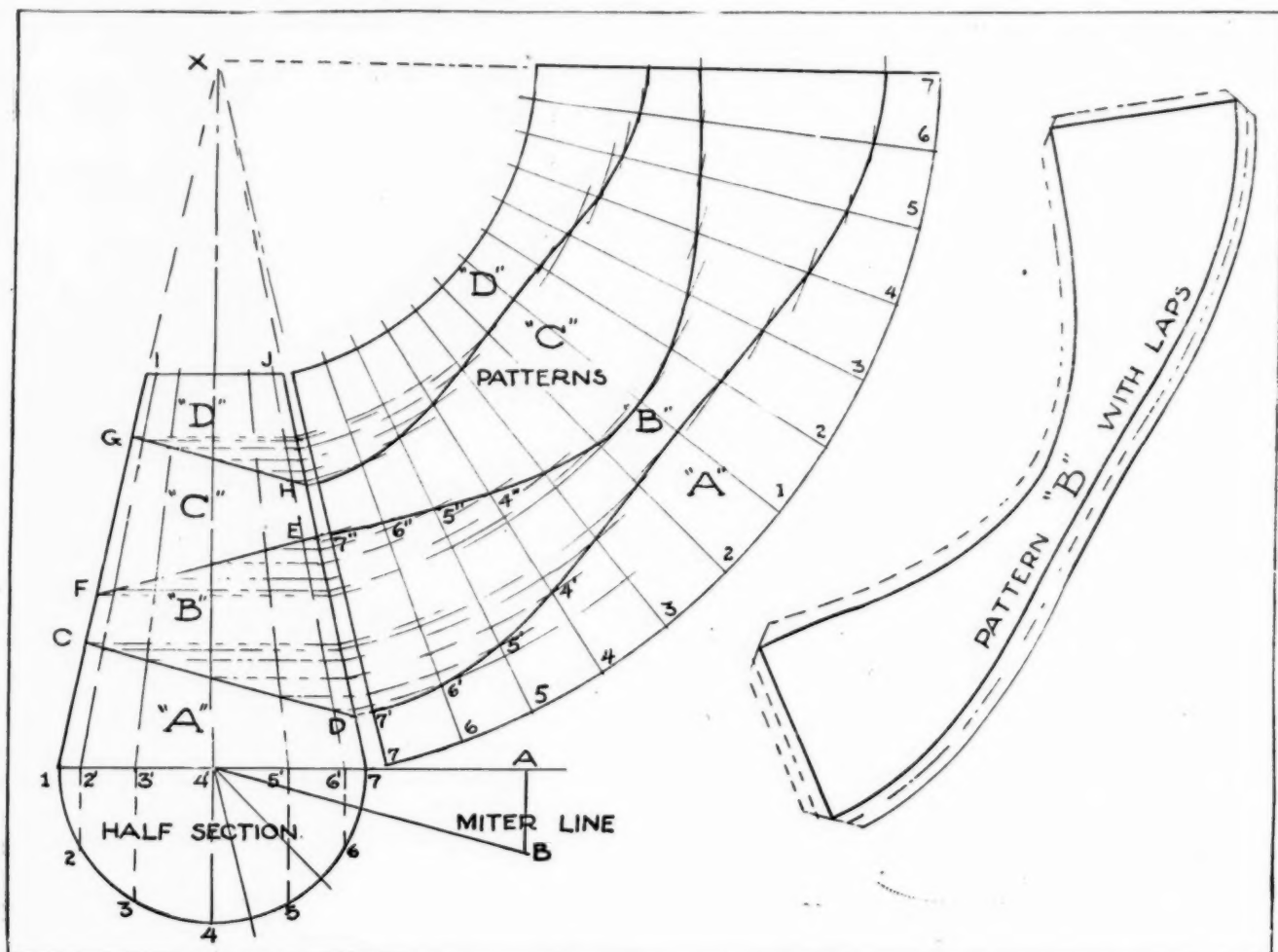
PATTERNS FOR FOUR PIECE TAPERING ELBOW.

By O. W. KOTHE.

To a large number of mechanics the problem here shown is always of interest, not so much that it is used very much but more so as a problem to develop.

the point X, cutting the miter lines in each point shown. From each of these points square over lines to the side line J-7 so as to transfer these foreshortened lines to the side line, thereby making them a true length.

The next step is to sweep the patterns using X, as center and point 7 as radius, describe arc 7-7. On this arc step off the stretchout required to make the cir-



Patterns for Four Piece Tapering Elbow.

There are several different methods of going at this fitting especially establishing the miter line. It is best to first draw the center line 4-X, and then describe the half section. Treat the quarter circle 4-7 just as though we were going to make a four piece elbow dividing it into six parts. The first part will establish the miter line which can be extended as 4'-B. Let 4'-A equal the diameter of base. Then the triangle 4'-A-B will give the exact rise of miter line for a four piece elbow. This triangle can be cut out of a piece of paper or metal and placed on the tee square shifting it to the desired height after which drawing the first miter line C-B. Then reverse the triangle and draw miter line F-E, after which reverse again and draw G-H. The base line I-J can be drawn to suit the diameter of small end. Next draw the radial lines to

cumference for the lower base of elbow, and at the same time seeing that it contains twice the number of equal spaces there are in the half section. These spaces in the half section can be used as a trial for determining the proper space in stretchout. When radial lines are drawn to the apex X, then sweep lines from each point in the slant line X-7 on to radial line in pattern of similar number, as in points 7'-6'-5', etc., also 7''-6''-5''-4'', etc. This gives the points of intersection and enables tracing the curbs. When this process has been continued establishing patterns "A"- "B"- "C"- "D", then the workman must cut out each one separately. The reason for this is that laps must be allowed as in the separate pattern "B" with laps. If this were not done the seams would telescope, and would make it difficult for assembling.

FRANK R. COOKE ENTERS NEW FIELD.

After sixteen years of service with the Whitaker-Glessner Company of Wheeling, West Virginia, twelve years of which were spent in the Chicago territory, Frank R. Cooke is about to retire from the Company's employment to devote all his time to a new enterprise. He has recently become interested in oil development. As secretary of the Fort Dearborn Oil Company which owns a producing well in Texas, his duties are such as to necessitate undivided attention. Many of his fellow stockholders are sheet metal contractors and he feels a special obligation to them to give his utmost thought and effort to the promotion of their welfare. His friends believe that he will achieve a high degree of success in his new endeavor, knowing, as they do, the persistent energy with which he performs every undertaking to which he pledges himself. His sparkling letters to the membership while he acted as secretary of the Allied Sheet Metal Contractors' Association of Chicago will long be remembered.

TANNER AND COMPANY REORGANIZE.

The passing away of Gordon B. Tanner, former president of the concern, made it advisable to reorganize the firm of Tanner and Company, Indianapolis, Indiana, jobbers of sheet metals and tinner's tools and supplies. The company was first formed, February 13, 1878, under the title of Tanner and Sullivan. From the beginning of its business career, a broad policy of liberal service and trustworthy goods has been maintained. The results have amply justified the efforts spent in developing high standards of business. The firm's trade has steadily expanded and its customers have become its friends.

The reorganization of the Company does not imply any change of policy. It is a matter of technical convenience rather than of any transformation with regard to the principles which dominate the business of Tanner and Company. The new president is K. E. B. Tanner. He will preserve the traditions of his predecessor and labor earnestly to widen the service and increase the number of friendly customers. The other officers are J. C. Henley, vice-president and general manager; F. W. Hillman, second vice-president; Eugene C. Miller, treasurer.

The incorporators are K. E. B. Tanner, M. H. Tanner, J. C. Henley, F. W. Hillman and Eugene C. Miller. The capital stock is \$100,000 under the new charter.

INDICATES TREND OF ZINC MARKET.

The American Zinc Institute will issue, hereafter, a monthly bulletin. Their March issue explains the activities of the Institute and comments on the various features of the industry. One comment is:

Not only the United States, but also all the other countries affected by the war, are now passing through the inevitable period of readjustment, and no one dares forecast how much time this readjustment will require. Among the deterrent

factors are: (1) the uncertainty as to the terms of peace, involving the form of the "economic alliance" which may (or may not) be established between the principal powers; (2) as to the question of a general price reduction, and consequent wage reduction; (3) as to the disposition of surplus Government stocks of goods. Again, to facilitate exporting some way must be found to handle the exchange situation. One writer on the subject has recently said, "We have more to fear, thrice over, from high exchanges and lack of transportation than from high prices and high wages here."

The annual meeting of the Institute will be held at St. Louis, Missouri, May 12, 1919.

HAS SEVERAL GUARANTEED GRADES.

To the practical sheet metal contractor it is of the highest importance to be able to secure materials of different grades to meet the requirements of varying conditions. There are times when circumstances do not warrant the use of the very best grade of galvanized steel sheets. On the other hand, however, no conscientious contractor will use material of doubtful character, for the reason that he cannot afford to weaken his reputation by the use of a product which will not give some degree of permanency as well as of satisfactory service. It is to meet precisely such conditions that the Dearborn Steel and Iron Company, Chicago, Illinois, has several grades of material all of which are guaranteed, thus eliminating the objectionable feature to which reference has just been made. This Company makes special efforts to fill the orders of its customers with precision and efficiency. Sheet metal contractors will find it to their advantage to enter into correspondence with the Dearborn Steel and Iron Company, 122 South Michigan Avenue, Chicago, Illinois.

RETURNS FROM MILITARY SERVICE AND WANTS AMERICAN ARTISAN.

TO AMERICAN ARTISAN AND HARDWARE RECORD:

While working on the Quartermaster's department at Camp Shelby, Mississippi, I had the pleasure of receiving your journal every week. Now that I have returned from military service I want to continue my subscription. It gives me many pointers for my business and I am very much pleased with it.

ANTHONY J. NESSWALD.

Decatur, Indiana, March 17, 1919.

GETS PATENT FOR A SOLDERING FLUX.

George P. Luckey, Wilkinsburg, Pennsylvania, assignor to the Westinghouse Electric and Manufacturing Company, has been granted United States patent rights, under number 1,293,823, for a soldering flux described herewith:

A soldering flux comprising a mixture of substantially 65 per cent of zinc chlorid and 10 per cent ammonium chlorid with 25 per cent of a fused mixture of potassium chlorid and sodium chlorid.

Wisconsin Sheet Metal Contractors' Association Holds Instructive Annual Convention.

The noted English novelist, Arnold Bennett, wrote a book entitled, "How to Live on Twenty-four Hours a Day." An instructive volume might be developed from the achievements of the Master Sheet Metal Contractors' Association of Wisconsin on "How to Hold a Complete Convention in One Day." By cutting parliamentary procedures down to the barest requirements of order and dispensing with useless formalities, the officers of the Association contrived to carry out an interesting program in one day which ordinarily would occupy two or three days. This was accomplished without sacrificing any advantages which might accrue to the members from prolonging the same proceedings.

The Convention was opened at 9:30 a. m. at the Hotel Wisconsin, Milwaukee, Wisconsin, by brief address of welcome from Frank Romberger, President of the Milwaukee Local. Otto Geussenhainer, President of the State Association, made an appropriate response to the greetings of the local sheet metal contractors and then delivered his annual address to the convention, the full text of which is herewith appended:

**Address of President Otto Geussenhainer to the Annual
Convention of the Master Sheet Metal Contractors'
Association of Wisconsin, at Milwaukee,
Wisconsin, March 20, 1919.**

"After an intermission of two years, it again becomes my duty to address you and review with you the field of our activities. I assure you it is an honorable and pleasant duty for me to perform. It is an honor and a pleasure to be associated with you. I have a high regard for every member of the Association and have made friendships through my connection with you that I will remember as long as I live. The two years' intermission since our last session seem not such a long time, yet, for some, the past two years have seemed the longest two years of their lives.

"During this time our country plunged into war and, though the war is over, the peace deliberations may not be completed for some time. The peace delegates from our country will assist in framing a peace that removes future causes for war. Will they be successful in this or will the seeds for the next war be sown? For, after all, commercial rivalry developing into commercial jealousy produces war among nations. Will the Peace Conference be able to remove this cause?

Plans to Eliminate Commercial Jealousy

"Our Association, assembled in convention, and every one of our locals when having a meeting, can be likened to such a peace conference—commercial jealousy between manufacturers, merchants, contractors, etc., often results in war and, although no bloody battles are fought, such a war generally ends disastrously for all concerned.

"With the purpose in mind to remove causes that

lead up to such a condition we assemble today, we have met in the past and we will continue to come together in the future until every vestige of jealousy has been obliterated from the minds of our membership.

Necessity for Membership Campaign.

"However, in order that our efforts be crowned with success it becomes necessary to extend our activity beyond our present limits to arouse from their lethargy the many who are still sleeping, to make those see, who don't want to see for there are none so blind. This requires missionary work of the highest order.



**Otto Geussenhainer, Retiring President Master Sheet Metal
Contractors' Association of Wisconsin.**

"Having this in view our Board of Directors authorized the inauguration of a membership campaign under the able leadership of our worthy secretary, some gains have already been made and as the campaign is still on more are expected.

Better Apprentices Laws Are Needed.

"More members are necessary for our Association should it succeed in its objects, but, recruits for the trade are just as necessary and here is where the Association is handicapped. The state has placed such an entanglement of laws around the apprenticeship situation that there are no more apprentices, with no apparent intention on the part of the state to create something new after destroying the old. Not only does the trade suffer, but, the public as well.

"It has been found advantageous to enact a law licensing plumbers in this state some years ago and inasmuch as this has had good results a great many masters and journeymen of the tinner's trade favor the licensing of tinner's. The matter has been dis-

cussed by a joint committee and I hope it will be brought before you for discussion today and that all will take part in the discussion.

Problems of Readjustment Concern All.

"In reviewing the problems that appertain to our trade and the solving of which causes us to assemble annually, let us not overlook the greater problems that confront our nation today, problems that influence every form of activity whether individual or association aims are concerned and which need the best talent and efforts of the nation to bring to a solution. Last year the state convention was omitted because the National Association was to convene in Milwaukee and the membership could attend the National gathering instead. It is needless to say that all those who attended were well repaid from every view point. All in attendance who usually attend those meetings pronounced it 100 per cent successful. Much credit was reflected to the State and the City of Milwaukee for this, but, the real credit belongs to the workers of the Milwaukee Local and the brilliant generalship of the convention committee chairman.

"In concluding my address I wish to thank all of the officers and members for their cooperation during the past years. It was quite a sacrifice on the part of the Board of Directors to attend the many meetings especially on the part of those who came from out of town.

"In bestowing my thanks to the officers, I will be a little more specific and remember our secretary who performed the lion's share of the work.

"And now I wish the Association in convention assembled on the road ahead into the future good speed."

At the close of President Geussenhainer's address, the Convention took up matters of business which occupied the attention of the members until the end of the morning session.

The afternoon session convened at 2 o'clock and began with a paper by B. F. John of Philadelphia, Pennsylvania, on "The Sheet Metal Master as a Business Man." Owing to the author's inability to be present in person, his address was read by E. B. Tonnson of Milwaukee, chairman Educational Committee Master Sheet Metal Contractors' Association of Wisconsin, as follows:

Paper on "The Sheet Metal Master as a Business Man"
by B. F. John of Philadelphia, Pennsylvania, Read by
E. B. Tonnson of Milwaukee at the Annual Convention Master Sheet Metal Contractors' Association of Wisconsin, Held March 20, 1919, in Milwaukee, Wisconsin.

"Criticism for talk's sake amounts to nothing. Constructive criticism means progress. Therefore, this paper is written not in the spirit of criticism, but to assist in the progress and uplift of our trade. In knowing our faults and facing facts may we know in what manner we may progress. No business man—and it is for each one of us individually to decide whether we qualify in being a business man or not—has been as much maligned from all sides during the past years as the man in our trades: Sheet Metal, Roofing and Heating, and no trade has accepted this rebuke as indifferently as ours.

"This has been true, simply because we, as a class, have until recently been unconcerned with that, in the

business and political world, which existed outside our small circle, and no concerted effort has been made to aim at a high mark, and take from other businesses and professions the salient points that are included in the making of them and universally intermingled with their successful operation.

"Respect for our business from the public and our source of supplies, is equal only to the amount of respect we have for ourselves and not one 'mite' more.

"It is true there are striking examples of prosperous and efficient business men in our trades, but their number is so small in proportion to the whole that it has been the judgment of those outside our line with money to invest that our trades do not warrant safe investment.

Indifference to Expansion of the Trade.

"The majority of the prosperous and efficient business men in our trades are as much to blame because of this past condition as the balance, because of their indifference to the expansion of the entire trade, rather than their business alone, imagining they did not need the assistance of those in their trade, when in reality were they to lend assistance to their competitor, and assist in 'research work' through organization, their road to success would be easier and pleasanter in the making.

"It has only been during the past few years that part of the men in our trades realized that these facts were true, and by telling themselves the truth and facing facts, has any noticeable improvement been made.

"Unfortunately it has ever been in the minds of the majority of men who enter business in our trade that they are exempt to applying business methods and in their stead have developed suspicion and fear, with the result of failure or just as bad, near failure.

Asks Some Pertinent Questions.

"Why is it that men in our trade are satisfied with a living, when other professions build for achievement, expansion and posterity? Why is it that the thought of a son succeeding the father is repugnant to both? Any work that is honest is worth while, and is open to improvement and expansion and before many years have passed the sheet metal, roofing and heating trade will rank with the highest professions and when that time approaches, men with alert minds will enter the fields and take away the talent with which we were entrusted unless we keep pace with the improvement required of us.

"All about us we learn of 'business of research' concerted action for improvement. Is there no room for improvement in material and method in our trade? Yes, much!

"Sufficient for the past. The future holds out to us in our trades that which our predecessors never realized.

We Are Entering a New Era,

"The old times have passed and a new era is before us. The era of 1919 and the future. The conflagration that has consumed the world has purified the air. Business will change, methods will change, because of its existence. Men, all men, have learned much that is good in business, and as business resumes its normal way, the lessons learned, through taxes and financial

transactions, will aid in clarifying our business vision of our responsibilities of the future.

Keeping a Proper Set of Books.

"The smallest one or two man shop must be afforded the opportunity to see that he can become entitled to respect by all with whom he comes in contact, by noting and bettering the improvement of his fellow. That he is not exempt from keeping a proper set of books because he is a mechanic, and that there are many sources of information at his hand to draw from. The man who neglects to keep a proper set of books is like the ostrich that buried its head in the sand, believing if it could not see, no one could see it. We should prepare books and stationery for inspection as it is possible for any man at a nominal cost, and if this is not sufficient, spend more than nominal, to make an impression on those with whom we trade.

"Read and study, books and men. Often times an hour or two with a technical book is far better than a day's vacation. Rub elbows with the successful men, measure up to them in business methods, conversation and good habits. Too few of our trade take time to attend business lectures by men in our own line or outside of it. One hour spent in this manner has reshaped an entire business, for the better. Ask the successful busy man. Very few business men that are successful will deny you information simply because in imparting such information they realize they are making the thorny road to success smoother for themselves by helping the other fellow.

Study Improved Methods of Work.

"Let us improve our method of work by carefully noting as a body, its deficiencies in material, style and labor. Seek the labor saving device and demand better. Cultivate speed of production but not at the expense of efficiency. Improve your workmen, and interest yourself in each one individually, you or your assistants. Endless worry from strikes and disagreement can be avoided by consideration of a weekly salary to your regular yearly employees, instead of the rate per hour, as an employee is just as much interested in his yearly salary as his per hour rate, if it is explained properly to him, and this method will draw the best type of men to your shop.

"A clean shop; an inviting office, the best of tools—and these are none too good because we have not demanded better—are the things that make for progress and personal responsibility on the part of employer and employee. We should standardize our methods. The old days of the 'secrecy of the shop' are gone. Take your competitor into your confidence, show him all you can to induce him to raise the level of the trade. Pride of business and business establishments denotes the progressive man and is justifiable.

"If the building contractor uses unfair methods, it is in your power to stop them if you are friends. Many large buildings are the monuments of some 'good fellow' because of fear, suspicion and the lack of study.

The Factor of Cost.

"The 'cost factor' in our trade, is of recent birth to the majority and looked upon by some as a 'hoax,' yet this alone has during the past three years, strengthened the backbone of a number of men in our trade. The lack of this one 'business necessity' has caused more

failures than from any other one cause, and the application of it is simplicity itself.

Judicious Advertising Increases Business.

"The men in our line until recently, supposed that advertising was not necessary. Judicious advertising adds trade and originates ideas. It requires study to adopt to your individual need, and is therefore worth while. The man who puts something back into his business in such a manner, enlarges his scope, and receives twice the amount invested.

"The art of salesmanship is being rapidly cultivated in our trades. The man who depends alone on the customers he has on his books is in a precarious position, and the man who sells a job on price, usually the lowest price, is just as bad. The study of salesmanship is interesting and profitable and is just as important in our line as in merchandising; but it must not be confused with 'bluff and lying.' It requires study, painstaking study to obtain the view point your customer would like to hear. The jobs that are sold at a higher price than yours are sold because of salesmanship, backed by service rendered, and the profit made each year by the successful man is due to his ability to sell the job at a profit.

Take an Interest in Legislation.

"Too few men in our line interest themselves in State legislation. The few who do, have a thankless task when they wish to arouse interest against an obnoxious law, as we are prone to remain in our old habit of believing that our interest individually in the subject is so small, and we likewise think that it would have little weight with those whose action will eventually mean considerable loss and confusion in our trade.

"Gradually we are beginning to see that all these things and more are part of our personal business, and no business man that wishes to be successful can escape the personal responsibility that he owes to the vocation in which he makes his money to invest in all else that he has in life.

"We should believe that an Association of business men is a necessity and from it, with selected leaders who unselfishly believe in the 'greatest good for the largest number' all that is good for the trade as a whole can be developed.

"The Association must, to be worth while, become part of our daily business, and we must invest in it as much money as we do in our personal business, and until we appreciate this fact, that an association for business men is not a toy, our association will rank at the bottom of the ladder.

"Our meetings should mean a study hour, our committee meetings 'research work' preparing for the future, and invested with money to further the investment.

"We cannot 'straddle the fence' to keep everyone satisfied. We must decide upon our course, stand on solid ground and do things in Association work as business men should do, and it will pay one hundred per cent profit and we will get a 'lot of fun' out of the daily grind.

Make Association More Efficient.

"A few years back a few men realized that in order to become a factor in the business world the Roofing, Sheet Metal, and Heating Trades' Association must

alter its methods and view point, and with this in mind determined that to make an association a practical profitable success, it must offer something for sale and make a profit.

"Subjects were offered and discussed, such as Trade Protection, Apprenticeship classes; black-board talks by men in the trades, and lectures by men not in the trade; cost factor; and all points of interest to the individual who sat in his chair and never expressed an opinion.

"Gradually the Association meetings were better attended, more questions were asked, spirited discussions followed, also debates, until finally the meetings were doubled. Every suggestion for improvement was tried out, and gradually the suggestions multiplied.

"An office was rented and a live business man engaged to give all his time to Association affairs every day, and like the 'man up a tree' after he had worked into his position, he gradually added many things in which business men were interested such as 'Delinquent Debtor lists' (dead beats), Commercial rating books, added to which was the actual experience of thousands of good and bad customers; until now a telephone inquiry to the office in 96 per cent of the cases, and there are daily inquiries, can be had immediately. A collection bureau, so handled that thousands of dollars have been collected through the Association letter; card index systems on a number of subjects, viz: situations wanted, dishonest employees; catalogues of all material patented or not, etc., etc.

"An advertising campaign on the Fresh Warm Air Heating System, paid for alone by the Association, and from which startling returns were had; the money spent amounted to nearly three thousand dollars and continued.

"All these things were under the directions of committees with money to spend, and assisted by the office. And strange to say not one word was ever raised as an objection to this office, which now is the biggest factor of the Association work.

"The office is soon to be enlarged. There is an endless profitable work yet to be done, and the Association is equal to it and more. One item alone can prove the growth of the office. From two or three letters received in a week to a number every day and nearly four thousand a year.

Compensation Insurance Enacted.

"The Compensation Insurance matter was made a law. The Association assisted in the formation of a state wide insurance stock company and returns to its members in 1916—17 per cent, 1917—25 per cent and 1918—26 per cent of their premiums. Many of the Association members have had returned to them more than one hundred dollars during the first two years, and the Association dues were but \$15.00 a year.

"The Association controls this insurance feature as no man in the trade can be so benefited unless he is a member in good standing in its ranks. The Association members are well protected by law, and the Company is of the best, having nearly a two million dollar premium list in three years.

"The dues of the Association must be paid within 60 days from January first. All but two men paid

their dues in one year out of one hundred and thirty members, and this all was brought about simply by the patience and perseverance of the interested men in their hunt for something that the Association could offer for sale. Its membership is now sold. Men are applying voluntarily for membership. They want to buy a good proposition. The Association's record is clean, and its influence is felt throughout the business world where it is located.

Constructive Results of Organization.

"The office man is now the Secretary and all his time and energy is given to the Association work. He prints a Bulletin each month, sent free, to all the membership and the trade. There is always a good balance in the Association Treasury, and the Secretary and fourteen committees are always on the alert to spend the money for the betterment of the trade. A general advertising campaign is now under discussion and the numerous subjects that now are before the Association have made it necessary to have a meeting committee whose duty is to select the topics and obtain speakers, that are of the most importance. Invitations are sought for by the members to attend committee meetings as it is thought many new things are learned at these meetings.

"Many men in the trade have many times told in open meeting 'that all they possess in the world is due to the Association.' Thirty-one men have been made into business men with self-respect.

"This is not a dream, but a living every day fact, easily proven to your satisfaction, if you will visit this Association and the 'latch string' always hangs outside to the men who are for progress and the uplift of our trade.

"We wish you likewise.

"An Association of business men, who seriously desire progress, and are willing to invest money in their Association, can make 100 per cent profit, and make the sheet metal master a business man in every sense of the word."

The subject of warm air heaters, both as regards costs of installation and operation, was ably discussed by George Harms of Peoria, Illinois, President National Association Sheet Metal Contractors of the United States. His address, including the three methods of estimating which he discussed, is reported herewith:

Address of National President George Harms to the Convention of the Master Sheet Metal Contractors' Association of Wisconsin at Milwaukee, Wisconsin, March 20, 1919.

"The sheet metal industry is composed of many branches. Some shops do a little of everything; others specialize on certain lines. The one thing that appeals most to the artistic also to mechanical skill, is cornice work.

"For years it gave employment to many mechanics. It required tons of galvanized iron, copper, and other metals and was considered a good paying proposition. Gradually, however, stone, brick, and terra cotta have taken its place. The loss of this branch of the industry is very keenly felt.

Cause of Decadence of Cornice Work.

"The sheet metal contractor is principally to blame for it. He has simply allowed the manufacturers of

other materials to take it away from him. Whereas the makers and distributors of these other materials have spent time and money to bring their wares before the public, also to induce the architects to specify their goods, the sheet metal contractor has done nearly nothing.

"Although thousands upon thousands of buildings have complete sheet metal fronts and others have cornices and window caps, many such buildings are fifty years old and older, and the work apparently is good for many more years, still the sheet metal contractor does not advertise this fact to secure more of this work. Metal cornices, if properly constructed, and erected, are absolutely fire retardent and fireproof.

"Owing to the nature of the material, it can be made very ornamental and still be sold for less than stone or terra cotta. Both the public and sheet metal

Contractors has done much to bring about better conditions. Tin plate is now made that can be guaranteed to stand for ages. Demonstrations and discussions at conventions have taught us many lessons on proper roof application and today we can put on a tin roof that is as good as ever before.

Blow Piping for Mills and Factories.

"A very important branch is blow piping for mills and factories both for conveying of dust, shaving, etc., also for heating and ventilating. Large quantities of material are used for this purpose and many men are employed on this work. Many shops do only this class of work, but as more or less is done in every city, both large and small, every sheet metal contractor should get into the game.

"There are many more branches, some important, others not. Many apply only to certain localities. There is one branch that is spread over nearly all sections of our great country. This is the one that your Secretary, Mr. Biersach, requested that I should tell you something about.

The Warm Air Heater Business.

"This is generally known as the Warm Air Heater business. Warm air or as it is better known, hot air heaters and the installation of them, is a branch that is well worth considering. It has been demonstrated that warm air heating for residences, is preferable to stoves, steam or water. There is no other method that is so pliable that will adjust itself to the various conditions.

"It is good for a small bungalow and equally good for houses of many rooms. It works quickly and noiselessly, produces heat for every pound of fuel that is consumed. Through properly installed vapor pans, it supplies all the humidity required by the human system. Warm air is the most healthy heat, although it costs less to install and maintain than either steam or hot water.

"It is a very important branch of the sheet metal industry. It can be worked in the country as well as in the city.

"It requires no greater investment than the other branches and can be conducted in connection with many other lines.

"The bulk of this work is done at a season of the year when outside work can't be done and above all, shows a good profit to the dealer. Now a few words how to enter this field and properly conduct it. There are many warm air heaters on the market, some good and others are better. Whatever warm air heater you may select, be sure to have confidence in its ability to produce the proper amount of heat, as it is absolutely necessary that you have faith in the heater before you can impart this same confidence to your prospective customer.

Advise Use of Good Registers and Pipe.

"Next, use registers and pipe of unquestionable quality. Learn what is required properly to heat the many different styles and sizes of houses and after having this knowledge, do not deviate from the right way. Do not figure on a warm air heater with a capacity of five rooms, to heat ten. It can't be done. Make all pipes of abundant capacity easily to convey the proper amount of warm air and let the cold air supply be sufficient to feed all the warm air pipes. If



George Harms, President National Association Sheet Metal Contractors of the United States.

contractor are benefited by its use, and a united effort should be made to regain this business.

Hollow Metal Windows Are Coming Into Favor.

"Along this same line, another branch, is hollow metal windows. This branch of the sheet metal industry started in the cornice shop. It has now grown to large proportions and the fact that the manufacturers of hollow metal windows and trim have organized to improve and protect their interest is evidence that they will not stand idly by if other materials take its place.

"Another branch that is practically lost, is tin roofing. There was a time when nearly every flat roof and many other roofs were covered with tin. Many buildings are covered with this material and the roofs are giving excellent service. If the sheet metal contractors had organized forty years ago, we would still put on good tin roofs, but being unorganized, they allowed the use of shoddy material and cheap work and spoiled the business.

"Owing to the poor tin and poorer work, these roofs sometimes were nearly worn out before they were completed. The National Association of Sheet Metal

you can poorly install a warm air heater in three days, take five days and put it in right, by using a warm air heater of abundant capacity, pipes and registers of proper size and see that the job is properly installed. You can and should guarantee the heating of any house.

"Be very careful, however, that you collect the money due you shortly after completion of the job, as it is a peculiar trait of many warm air heaters that they will not heat until they are paid for.

"There is one point that the warm air heater branch has in common with all other lines. You must know what it costs you to install a job, you must know the expenses connected with it and above all you must get enough money to pay for everything and allow you a fair margin of profit.

"I will now give a few lessons in warm air heater estimating, selling and installation.

Difficulties of Estimating Costs.

"Properly to estimate a warm air heater job, is not as difficult as it is to figure cornices, vent pipes, etc. It is a very easy task to prepare a net cost sheet of different warm air heaters, also of pipes and registers. Having this prepared, it is only necessary to determine the size of warm air heater required, the amount of heat needed for each room and thereby show the size of pipe and register. As the cold air supply should have an area of all warm air pipes, this is easily figured.

"The estimating of warm air heater work is very much simplified by lumping certain items together, assuring thereby that everything is figured, reducing the possibility to forget some things.

"Allow me to show you several methods of estimating. The first is absolutely correct, but contains so many items that some may be forgotten. As everything you forget to figure, but must furnish just the same, is a loss to you, this should be avoided.

"The second method is also correct, but much simpler. The third is the real and only way. It required very few items, therefore less to remember or forget, takes little of your time and you are always ready to make a bid on a job.

Estimating Method No. 1.

1 No. 280 Warm Air Heater	\$175.00	
1 No. 280 Warm Air Casing	24.00	
	<u>\$199.00</u>	
Less 35%		\$129.35
1 No. 12 B. J. Register	7.15	
2 No. 10 B. J. Registers @ \$5.10.....	10.20	
1 No. 9 B. J. Register	4.25	
3 9x12 B. J. Registers @ \$2.10.....	6.30	
	<u>27.90</u>	
Less 40%		16.74
1 No. 2 head No. 12 Reg.....	2.94	
1 No. 12 boot No. 12 Reg., 12" col....	2.94	
1 No. 6 angle No. 12 Reg.....	1.48	
2 No. 2 heads No. 10 Regs @ 2.60.....	5.20	
2 No. 12 boots No. 10 Reg., 10" col.@2.60	5.20	
2 No. 6 angles No. 10 Regs. @ 1.32....	2.64	
1 No. 2 head No. 9 Reg.....	2.24	
1 No. 12 boot No. 9 Reg., 9" col.....	2.24	
1 No. 6 angle No. 9 Reg.....	1.12	
3 58" pcs. No. 8 stack @ 4.36.....	13.08	
3 51" pcs. No. 8 stack @ 3.84.....	11.52	
3 5" pcs. No. 8 stack @ .68.....	2.04	
3 4" pcs. No. 8 stack @ .60.....	1.80	
3 2" pcs. No. 8 stack @ .54.....	1.62	
3 No. 2 hds. No. 8 stack, 9x12 Reg.@1.76	5.28	
3 No. 12 boots No. 8 stack, 9" col.@1.76	5.28	
3 No. 6 angles No. 8 stack @ .70.....	2.10	
5 ft. 12" IC tin pipe @ .47.....	2.35	
15 ft. 10" IC tin pipe @ .41.....	6.15	

25 ft. 9" IC tin pipe @ .37.....	9.25	
1 12" IX adjustable tin ell	1.00	
3 10" IC adjustable tin ells @ .60.....	1.80	
5 9" IC adjustable tin ells @ .50.....	2.50	
	<u>91.77</u>	
Less 33 1/3%		61.18
1 12" side casing collar60	
2 10" side casing collars @ .50.....	1.00	
4 9" side casing collars @ .46.....	1.84	
1 12" damper60	
2 10" dampers @ .40.....	.80	
4 9" dampers @ .38.....	1.44	
2 1/2 ft. 10" No. 24 galvanized smoke pipe @ .64	1.60	
1 10" No. 24 galvanized smoke ell.....	1.30	
1 18x24 galvanized register box	3.60	
1 20x24 galvanized register box	4.00	
1 18" cold air shoe	4.00	
1 20" cold air shoe	4.50	
2 18" cold air ells @ 3.00.....	6.00	
2 20" cold air ells @ 3.60.....	7.20	
10 ft. 18" cold air pipe @ 1.00.....	10.00	
10 ft. 20" cold air pipe @ 1.20.....	12.00	
	<u>60.48</u>	
Less 30%		42.34
1 18x24 wood face	3.00	
1 20x24 wood face	3.33	
	<u>6.33</u>	
Less 60%		2.53
25 lbs. asb. paper @ 13c lb.....	3.25	
1 pkg. dry paste40	
Freight and dray	5.00	
4 days' labor at 65c per hour.....	20.80	
4 days' helper at 35c per hour.....	11.20	
	<u>292.79</u>	
20% overhead		58.55
		<u>351.34</u>
25% profit		87.83
		<u>439.17</u>

Estimating Method No. 2.

1 No. 280 Warm Air Heater and Casing.....	\$129.35	
1 12" side wall opening for hall	12.27	
1 10" side wall opening for parlor	10.89	
1 10" side wall opening for dining room	10.49	
1 9" side wall opening for kitchen	9.99	
3 stacks to second floor	38.68	
1 18" cold air return	17.72	
1 20" cold air return	20.72	
Smoke pipe	2.03	
Asbestos paper and paste.....	3.65	
Freight and dray.....	5.00	
4 days' labor	20.80	
4 days' helper	11.20	
	<u>292.79</u>	
20% overhead expense.....		58.55
		<u>351.34</u>
25% profit		87.83
		<u>439.17</u>

Estimating Method No. 3.

1 No. 280 Warm Air Heater	\$210.00	
1 12" side wall opening for hall	24.00	
1 10" side wall opening for parlor	20.00	
1 10" side wall opening for dining room	20.00	
1 9" side wall opening for kitchen	18.00	
3 stacks to second floor	72.00	
Smoke pipe	6.00	
Asbestos covering	6.00	
	<u>376.00</u>	
15% of above for cold air.....		56.40
Freight and dray		6.00
		<u>438.40</u>

"Selling warm air heaters is the same as any other line. Study your customer and approach him according to his peculiarities.

"There is, however, one thing that you must not overlook. In the selection of a warm air heater women have considerable to say. Be sure to demonstrate to the ladies of the house that you know your warm air heater, that you know what size is required and show them just where the different registers are

to be located so they can still put the furniture in suitable places. Go over the entire job with them. Don't talk price, but quality and service. If you get the ladies interested, it's easy to close the deal.

"Be very sure to prepare a written or printed contract covering the entire installation and when you have sold the job, present it and request your customer's signature.

"Prepare a plan of the house showing where the warm air heater is set, location of registers and sizes of pipes, etc.

Methods of Installation.

"Now it becomes your time to fulfill your part of the contract. You may find that slight changes from your plan are needed, do not hesitate if through a change you can improve the job. Always keep in mind that you have contracted to heat the house. If you did make a mistake in your estimate, do not try to make up by omitting some apparently unimportant thing, but make the job right, no matter what it costs. It is better to lose a little money on account of your mistake, than to slight the job and have dissatisfied customers on your hands.

"It is easier to get over a small loss for which your customer is not to blame, than to lose his good will and probably much more money later on. Success in the warm air heater business is attained the same as it is in any other line, namely through proper service. Give your customer the value of his money, bearing always in mind that he has entrusted the heating of his house to you, and that you must make good.

"After you have done all of this, you can easily perform the last act, namely present the bill and collect the money."

A timely and suggestive talk was given by Frank Romberger, President of the Milwaukee Local, on the topic of "Rehabilitation of the Sheet Metal Cornice, Coping, and Metal Trim." Reference had already been made to this topic by President Harms, and the talk by Mr. Romberger served to focus attention upon this vital problem of bringing back into popular favor the neglected sheet metal cornice with its pleasing ornamental effects.

Everyone connected with the Master Sheet Metal Contractors' Association of Wisconsin knows the untiring energy and zeal of its Secretary, Paul L. Biersach. His address to the Convention was characterized by earnestness and a careful, dispassionate analysis of conditions. Its text in full is as follows:

Report of Secretary Paul L. Biersach to the Annual Convention of Master Sheet Metal Contractors' Association of Wisconsin, at Milwaukee, Wisconsin, March 20, 1919.

"The past two years of our State Association have been very successful in many details of the work of our organization, when a close examination of what has been accomplished, not through, what is now so commonly expressed 'camouflage' but by steady, healthy, sensible business methods, which, after all, when properly applied, bring, bear and accomplish the best results.

"The increase in membership has been particularly gratifying in view of the fact that our membership roster tabulates over thirty per cent more at present than at our Convention two years ago.

"With such a showing your Officers and Board of Directors feel that their efforts have not been in vain. Let me please call your attention to the fact that your Officers and Board of Directors met quite frequently during their term of office, to solve problems confronting your Association, always without any expense to your Organization, and it is a pleasure for me to testify that they have performed the functions and responsibilities imposed upon them in the minutest detail.

Campaign of Publicity.

"During the last six months, your Board of Directors inaugurated a campaign of publicity, imposing the responsibility of such a campaign upon your Secretary, who immediately proceeded with the same by sending out letters and follow up literature to Sheet Metal Contractors not affiliated with our Organization, with partial satisfactory results but with fond expectations that our hopes will be fully realized so that we can, in the very near future, pronounce "Success." This



Paul L. Biersach, Reelected Secretary Master Sheet Metal Contractors' Association of Wisconsin.

campaign will be most likely continued by your new administration, which you will put in power today.

Work of Educational Committee.

"Your committee on this important part of our Association work has been very active since our last Convention and one of its members, Mr. E. B. Tonnsen, I am quite sure, will make an elaborate report and also submit to you an important paper during the afternoon session.

Apprentices and Trade Schools.

"Great importance must be attached to the clearing up of the apprenticeship and this should be very easily solved by a united effort of representatives of Employer and Employee. I am quite sure that the Trade Schools will coöperate with any committee appointed to confer with them on this problem. The chairman of the Industrial Committee can most likely enlighten you on the same.

Legislative and Industrial.

"Both these committees will apparently impart some valuable information as to their observations since we met last. These are very important committees and if properly handled, should bear good results and benefits for our cause.

Employer and Employees.

"Not until the present time has the opportunity presented itself where Capital and Labor or Employer and Employee should and must coöperate amongst themselves, more than ever before, for their mutual welfare and benefit. Your Board of Directors felt the trend of times in this direction and consequently have embodied this all important topic in your programme.

The Question of Licensing.

"Quite an agitation from several sources to license both contractor and journeymen in this State has been submitted to your Board of Directors and meetings with exchanges of views thereon were held between committees appointed by your President and representatives of labor. The gist of these meetings will be reported to you by the committee chairman.

"I am pleased to announce to you that our Treasury is on a better and sounder basis than ever before. Your Treasurer will give you a detailed report later in the day.

Shows Appreciation of Trade Journals.

"As usual, our appreciation and thanks must be extended to the various Trade Papers, such as AMERICAN ARTISAN AND HARDWARE RECORD, Metal Worker, Plumber and Steam Fitter, Sheet Metal, and our own Warm Air Heating and Sheet Metal Journal.

"The wide publicity given us through those channels, their frequent editorials on subjects of vital importance to the sheet metal industry, which, when considering their large circulation, was always of great value to us. I hope due recognition will be given them when the Committee on Resolutions begins their activities.

"Unfortunately we were unable to hold our annual Convention last year for reasons all known to you and especially in view of the fact that our National Association held their fourteenth Convention in Milwaukee and an expression from all the State locals and most of the membership persuaded your Board of Directors to eliminate the same at the time.

"Your Convention Committee labored extensively and took great pains in formulating your program and their efforts will be amply repaid if the same meets with your approval and is successfully carried out.

Thanks Officers for Cooperation.

"I wish herewith to express my sincere thanks for the cooperation given me by all of the other officers and Board of Directors during the past two years.

"In conclusion let us continue to work together in unison and harmony and let our efforts in the future as in the past, be to achieve educational and mechanical efficiency, trade protection and other problems essential to the carrying out of a successful business career for ourselves.

"Those of you who have attended Sunday school will recall that you were told never to grow weary in well doing, yet many times in our business career, the question might be asked, 'Why stand ye here all the day idle?'"

The closing address of the session was a discussion of "Business Burdens" by Edwin L. Seabrook of Philadelphia, Pennsylvania, Secretary National Association Sheet Metal Contractors of the United States. The complete text of his informative essay is as follows:

Address of Edwin L. Seabrook, Secretary National Association Sheet Metal Contractors, at the Convention of Master Sheet Metal Contractors' Association of Wisconsin, Milwaukee, Wisconsin, March 20, 1919.

"Business burdens, like honors, come to some by achievement, they are thrust upon some, while others obtain them in various ways. It matters not, in a certain sense, how they reach us. One fact stands out beyond dispute—every business man must carry his own burden.

"The dictionary term for 'burden' conveys the idea of a load, hence that which is borne by the mind, duty, care, charge, responsibility. When we analyze the business burdens and sum up their total, we find that it includes all of these, and probably some more. No business man is care free. There is a big difference, however, as to the manner in which these are carried. Some go along in a six cylinder machine, while others take the old creaking ox-cart style.

Business Burdens Are of Two Kinds.

"If the burdens of business are carefully analyzed, they can be placed into two classes: First, those burdens or influences over which the individual has but little or no control, but which have a more or less vital bearing on business. The other class will fall within almost complete control, if not entirely so, of the individual business man, and for which he is entirely responsible. So, in the final analysis of the subject, every sheet metal contractor is carrying two kinds of burdens—those to which he is subject by outside influences, and those that are almost entirely subject to him through his own activities, mental attitude, developed through study and experience, or undeveloped through lack of these. General business conditions are something over which the individual has no control, but is controlled or governed by them. The labor problem is something within the partial control of the individual, particularly if he is willing to seek the cooperation of others in his own line whose burden is on a par with his own.

The Problem of Labor.

"Labor is one of the burdens of business, not in the sense of a grievous load, but of a problem that is changing from time to time and must be solved. This burden will not be carried as it ought to be until there is a correct understanding of the proper relations between employer and employee. This understanding must not be in an individual case here and there, but include the masses of both factors in the problem. If the burden is to be lightened there must be a change on the part of labor in the method of dealing with the employer when changes are desired in wages or working conditions.

"The former attitude of framing an agreement in secret and then presenting it to the employer with a 'sign or we strike' ultimatum must give way to an invitation or request for a conference. On the other hand, the employer must not refuse to meet employees

around the conference table. A working agreement is a contract between two parties and both should have an equal part in framing it. The labor problem burden will be lightened on both sides if, when changes are desired, the conference table is sought rather than hurling ultimatums at each other.

Burdens Which Affect Competitors.

"In passing to the burdens for which each individual is directly responsible, we shall find that they not only affect his own business adversely, if they are not properly carried, but to some degree have the same effect on the business of his competitors. An association of paint manufacturers once gave out the statement that they could not afford to have one turning out an inferior article, and the reason for this statement is quite obvious.

"It needs no argument to show that the business burdens of the sheet metal contractor in any com-

tractor must in some sense bear a portion of all of the burdens connected with the business. If we follow the natural order of a contract from its inception until it is completed, considering all the business factors connected with its performance and its relation to the customer and every feature of the business, we shall have a pretty fair idea of the distinct burdens or business equipment that are necessary for the sheet metal contractor.

"No shop can operate without labor, and I have touched upon that problem in a general way, because it is a very real one, although not within the entire control of the sheet metal contractor. I will pass over the mechanical efficiency of the individual shop, because I believe that this is as high as any other trade in building construction, despite statements often heard to the contrary. I will only take up those problems, burdens or equipment that are under the direct control of the individual sheet metal contractor and his methods of carrying, or handling, reflect directly upon him as a business man, and affect his business profits.

Function of Buying.

"Most naturally, the first step is buying material. Most sheet metal contractors pride themselves on being able to buy at the right price. Probably if a percentage were to be assigned, these different burdens, buying material would take the highest of all. But do many of the shops buy at the best possible price? Are they prepared to take advantage of offers when money could be saved? Are their business methods such that when these offers are available they know about them? The man who buys right is generally informed by his source of supplies when he can make a good bargain. Are there not some firms carrying a little heavier burden on the buying equipment than is necessary?

Importance of Estimating.

"Estimating is a vital part of the business. The one who does the estimating, be he proprietor or employe, holds the financial standing of the business at the point of his pencil. It may well be doubted if a large percentage of the estimating is properly done. It is quite certain that hundreds of firms make no attempt to keep a record of their estimates in any intelligible form. The back of an envelope often serves the purpose of a make-up sheet for a thousand dollar job. The foundation of every contract is the estimate, and this cannot be too carefully compiled. A permanent record ought to be made of all estimates, as a matter of comparison, when the work is done.

Determining Contract Costs.

"Linked with the contract itself is the cost of its performance. How many keep a cost account of the time and material that go in each contract? How many care to face the loss or gain on each contract, particularly if there is a loss? The estimating of costs in contracts develops out of experience and recording the exact cost on work previously done. Any other method of estimating than that which is based on previous knowledge of the cost of similar contracts is mere guesswork.

Closing Contracts—Salesmanship.

"How many contracts are closed, or attempted to be closed, purely on the question of price rather than on



Edwin L. Seabrook, Secretary National Association Sheet Metal Contractors of the United States.

munity are practically identical. In fact, with but a slight variation, they are identical throughout the United States. How these burdens are handled, carried or controlled, whichever way you please to put it, influences not only the individual but the others associated with him in his particular locality.

"Suppose at this time we change the word from burden to business equipment, because this is exactly what these burdens mean. Every sheet metal contractor must have certain equipment to carry on his business just the same as he must have tools in his shop. It is a sad commentary, however, that some shop equipment is mighty poor and some business equipment still poorer. There are some firms that are attempting to carry part of the equipment burden and leave part of it behind. There are just two things to do: drift or plan to use the whole equipment burden. We may well assume that a large number will always drift, while the other portion will plan to use the equipment to the very best advantage possible.

The Equipment Necessary to Business.

"Every contract performed by a sheet metal con-

merit, quality of material and good workmanship? 'How cheap can it be done?' has been one of the guiding features in the attempt to close contracts. How many sheet metal contractors are preaching the gospel, 'whatever you pay you pay too much, because I can do the work for less'? Is it any wonder that customers are naturally inclined to consider price first?

Adequate Bookkeeping System.

"Does the average sheet metal contractor keep a set of books that shows the losses or gains of the business or the status of the business at any given date? Probably since the income tax has forced some kind of bookkeeping the average is a little higher than formerly, but the fact is that many do not know the standing of their business nor the profits. In some form or other they set down what their customers owe and when the customer pays the bill, but beyond this the bookkeeping is a nonentity. Just a few hours before writing this article I helped a man out with his income tax return. His books showed very little and he had to refer to invoices and a dozen other things to get all his expenses. He had very little idea how much he had made during the year. He was mightily surprised, although agreeably so, when he found that he had to make out a check for the Internal Revenue Collector. Bookkeeping is the thermometer that registers the status of the business and shows in what direction it is headed.

Methods of Cost Accounting.

"The overhead expense, or cost of conducting business, has been discussed from every angle at different conventions. Most men realize the importance of this item in business conduct. If conventions and local organizations have done nothing else than direct the attention of sheet metal contractors to the need of including overhead expense in all their business operations they have filled a great need and justified all the time and expense given to them. Uniformity in the application of the overhead expense to contracts is an essential. Until there is uniformity in distribution of overhead charges there will probably be as many different prices as there are estimates.

Prompt Rendering of Bills.

"When the work is completed the bill should be sent at once. Many are in the habit of rendering bills once a month, or at any time that may be convenient. There is no use in doing work and selling goods unless they are to be paid for, not some time, but within limits usual to sound business practice. Send the bill as soon as the work is done. Haven't time is no excuse.

Systematic Collection of Accounts.

"In order to pay it is necessary to collect. This ought to be done systematically. If one-half of what is said about letting bills go uncollected in the trade papers is true, then certainly this part of the business equipment is in pretty bad shape. The consensus of opinion seems to be that the average man does not handle his collections properly; that is, insisting upon payment being made when the account is due. There is nothing gained by timidity in pressing for a settlement, through fear that it will hurt future business. The man who insists on prompt payments retains his customers the best.

Make Money by Discounting Bills.

"This is a money making proposition for those who do it, but only a small percentage take advantage of it. The real reason for this is because other parts of the business conduct that make discounting possible are inefficiently managed. It is a well-known fact that the one who discounts gets better service and buys at a better price than those who do not. The ability to discount bills is not so much a matter of the amount of capital as it is the proper handling or carrying the burden of the other business equipment.

Pay Bills When Due.

"Material is sold on a definite time as to payment. While a good percentage pay on time, the experience of some credit men who were present at a convention where this subject was discussed showed that it was not as large as it ought to be; neither was the percentage of prompt payment as good as it ought to be, due largely to the fact that collections were not looked after as they should be.

Value of Credit Standing.

"Many business men do not always get the credit standing or rating to which they are entitled, because of a disregard in giving credit information when it is asked. It may seem a piece of smartness to turn down the representative of a commercial agency, but this smartness has a rebound which always works an injury, in some form or other, to the one doing it. There is nothing in being evasive or hesitating about giving the information asked. A man is never given a good credit rating on silence about his business affairs. This lack of credit standing is oftentimes due to the slowness in paying bills and in making collections.

"At this point we see five of the burdens or parts of the equipment pretty closely bound together. Credit standing, paying bills, discounting bills depend almost entirely upon the promptness with which the bill is rendered and the collection made.

Advantages of Business Publicity.

"Everybody appreciates the value of business publicity. If they do an exceptionally large piece of work, or if it is difficult, or well done, they want everybody to know about it. Newspaper advertising, circularizing, letter writing, and other forms of publicity, can be made of great value to the sheet metal business. Those who do this, however, are small in comparison with the great business value of this item. In a city of a hundred thousand people one firm is probably installing more warm air heaters than a dozen other firms put together. One indulges in lots of publicity, the others do not believe in it, or at least do not practice it.

Developing New Business.

"A sheet metal contractor once said that he never worked on an old building but that he examined it to see if he could not suggest something else. He looked for a place where a skylight was needed or a ventilator could be used, or any other thing that he handled. This is developing new business rather than simply following the old lines and trying to take existing business away from one's competitor. New business developed by suggestion is more profitable than if secured by competition. How many are trying to think out new lines of work that they can offer to their customers and others? Some one, of course,

is doing this all the time, otherwise there would nothing new develop in the sheet metal business. Automobile repairing has become a big factor in some shops. Safeguarding machinery is another item that can be developed with success. These two are mentioned just to show the big field for sheet metal and developing new business is one of the burdens, the carrying of which can be made very profitable.

Answering Correspondence.

"It costs nothing to be courteous, but its returns are large. The answering of business correspondence is a courtesy due from one business man to another. In addition to this, a man's business qualification and his business conduct are very often judged by the manner in which he attends to his business correspondence. There are a great many who do not like this business burden and they do as little of it as possible, and because of these the burden is a great deal heavier than it ought to be. In these days a letter will do nearly everything that a personal interview will, therefore it is an essential part of the business equipment.

Handling Complaints.

"In the nature of business transactions some things go wrong and complaints are bound to come. Some people shun these and put off adjusting them just as long as possible. Just as long as human nature is what it is, business will be burdened more or less with complaints. The burden is all the heavier if they are dodged. I know a sheet metal contractor who will attend to a complaint before he will look after new business. Because of this attitude his complaint burden is comparatively light and he lessens the disposition on the part of his customers to complain by the promptness with which he responds to their complaints, whether they are justified or not.

Studying Satisfaction.

"Very naturally every sheet metal contractor tries to give satisfaction, or at least thinks he is. How many realize that they are not merely selling sheets or tin or registers or warm air heaters, however great the mechanical ability in assembling these may be, but something that is necessary to the happiness, comfort, or health, and these requirements must be satisfied. It is satisfaction that the sheet metal contractor is selling and not the products of his shop. I know a sheet metal contractor who has refused more than once to install a certain kind of warm air heater, although he had that very heater in stock, because he had satisfied himself that it would not give satisfaction. This man is studying to satisfy. Unless the sale satisfies it would better not be made.

Good Will Is Essential.

"The more a sheet metal contractor can burden himself with the good will of his customers and the community the better he is off. Possibly this is one of the most pleasant burdens that can be carried, and yet its attainment does not seem to appeal to all, or at least some do not show the proper appreciation of it. Many, whether they realize it or not, assume an antagonistic attitude when a show of good will would serve much better. It will pay to study what pleases your customer and watch just as cheerfully for evidences of displeasure.

"Here are seventeen business burdens, or pieces of

equipment, that are essential to every sheet metal contractor, large or small. The efficiency of a business depends upon the system that operates its equipment.

"When James Allard, the poultry fancier farmer, honks his way into the poultry show with a crate of his finest, the thing that thumps against his temples is: 'How high will I score, how many premiums will I take home?'

"When little Miss Goldensilver rides her manicured horse into the sawdust ring at the annual horse show, the thought that thumps with every heart beat is: 'What will be our score?'

"If any of you think you are a blue ribbon sheet metal contractor, how high do you score on carrying your business burdens, or equipment? There is such a thing as measuring the efficiency of your business equipment in percentages. Take out your pencil, write down these seventeen business burdens and mark opposite each one the percentage of efficiency that you think you can score, counting one hundred as perfect."

The officers elected to perform the work of administration during the coming term are as follows:

President: E. B. TONNSEN, Milwaukee;

First Vice-president: C. W. PANSCH, Racine;

Second Vice-president: C. F. WARNING, Oshkosh;

Third Vice-president: F. W. DIEDRICH, Fond du Lac;

Fourth Vice-president: J. B. WALLIG, Kenosha;

Fifth Vice-president: OTTO GEUSSENHAINER, Sheboygan;

Secretary: PAUL L. BIRSACH, Milwaukee;

Treasurer: WILLIAM F. GALLUN, Milwaukee;

Sergeant-at-arms: ADOLPH SCHUMANN, Milwaukee.

NOTES AND QUERIES.

Air Compressor.

From C. L. Epps, 209 North Washington Street, Van Wert, Ohio.

Please tell me where I can get a small air compressor to test radiators.

Ans.—This can be purchased from the F. L. Curfman Manufacturing Company, Maryville, Missouri.

Patterns for Steel Boats.

From Walter R. Groom, 503 Manor Street, Columbia, Pennsylvania.

Would like to get patterns for steel boats.

Ans.—The H. F. Thompson Boat and Pattern Works, Decorah, Iowa, can furnish these.

Sheet Metal Groover.

From the Barrett Hardware Company, Joliet, Illinois.

Who in St. Louis makes a sheet metal groover?

Ans.—The Crescent Novelty Manufacturing Company, 703 South Broadway, St. Louis, Missouri, makes a groover.

Cistern Filter.

From O. R. Gates, Independence, Iowa.

I would like to know who makes a cistern filter.

Ans.—This is made by the Bridges Manufacturing Company of Bedford, Iowa.

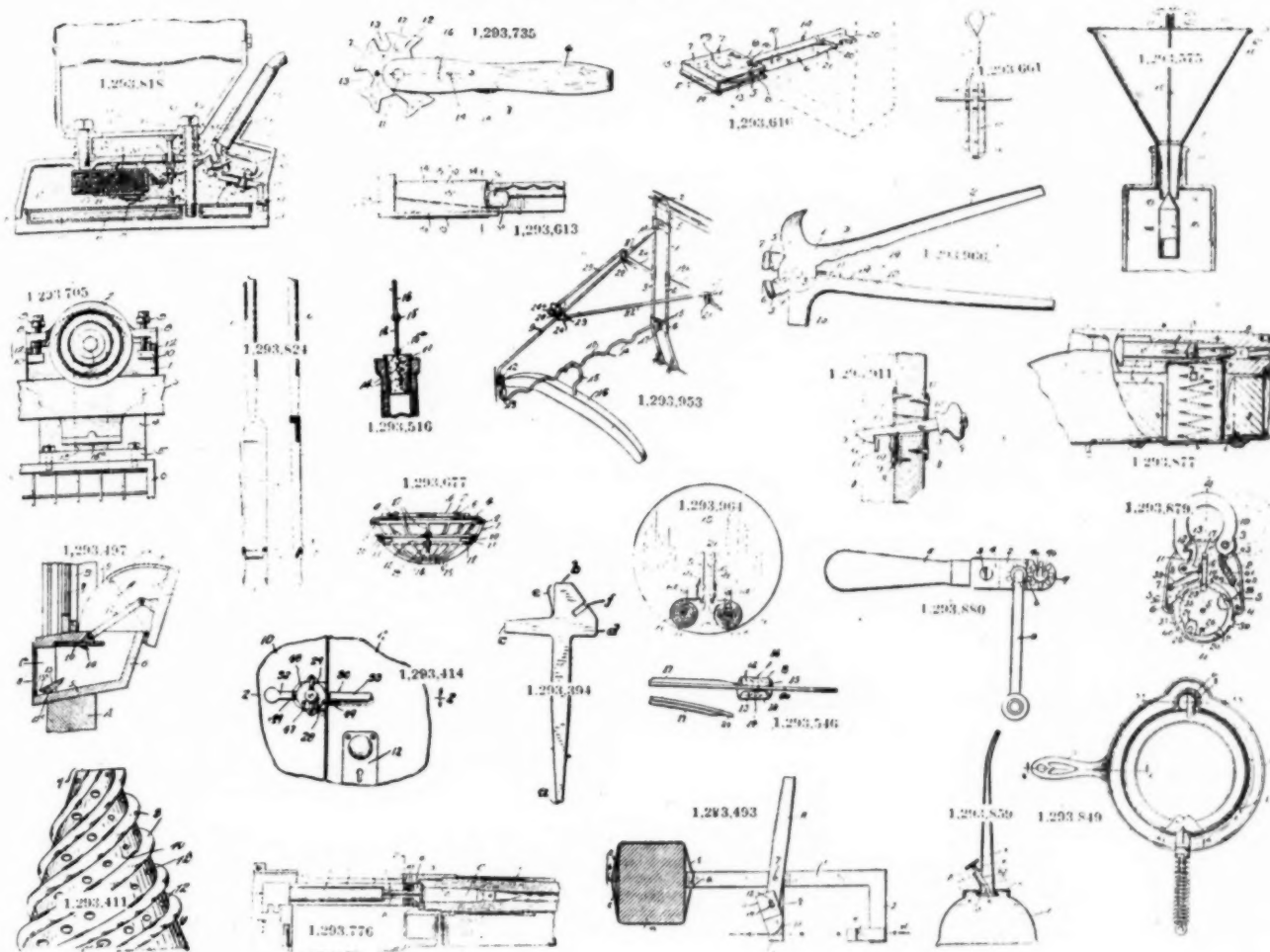
Elbow Machines.

From R. J. Schwab and Sons Company, Milwaukee, Wisconsin.

Kindly give us the names of manufacturers of elbow machines.

Ans.—Hemp and Company, St. Louis, Missouri; C. DeWitt Wagner, Cedar Rapids, Iowa; and Niagara Machine and Tool Works, Buffalo, New York.

NEW PATENTS.



1,293,394. Carpenter's Tool. John M. Fiori, Poughkeepsie, N. Y. Filed Aug. 22, 1917.

1,293,411. Washing Device. Gustav L. Grabe, Tompkinsville, N. Y. Filed July 14, 1917.

1,293,414. Door Bolt-Lock. Andrew J. Grimeck, Brooklyn, N. Y. Filed Sept. 6, 1918.

1,293,493. Wire-Stretcher. Charles C. McMurphy, Casa Grande, Ariz. Filed Oct. 24, 1918.

1,293,497. Ventilator. Orville C. Mann, Oak Park, Ill. Filed Sept. 8, 1914.

1,293,516. Cork-Extractor. Michael Nehman, Detroit, Mich. Filed March 19, 1918.

1,293,546. Safety-Razor-Blade Holder. John Raycroft, Bridgeport, Conn., assignor of one-half to Sarah Raycroft, Bridgeport, Conn. Filed Sept. 20, 1918.

1,293,575. Funnel. Samuel F. Tapman, Jr., Jamaica, N. Y. Filed Nov. 19, 1914.

1,293,613. Washboard. Charles E. Manley, Maricopa, Cal. Filed Oct. 31, 1917.

1,293,616. Key-Lock. Moses G. Norton, Los Angeles, Cal. Filed Oct. 9, 1916.

1,293,661. Clothes-Pin. Irving J. Atkins, Dallas, Tex. Filed July 27, 1918.

1,293,667. Sifter-Grate. Giles G. Bole, Union City, Mich. Filed June 6, 1918.

1,293,705. Door-Hanger. Conrad E. Cederborg, Chicago, Ill. Filed May 13, 1918.

1,293,735. Wrench. William S. Du Charme, Cleveland, Ohio. Filed Sept. 27, 1918.

1,293,776. Firearm. Leroy T. Hillman, Watertown, Mass. Filed Sept. 21, 1916.

1,293,818. Electric Iron. Cyril N. Lewis, Ridgefield Park, N. J., assignor to Frances Rockefeller King, New York, N. Y. Filed Aug. 1, 1917.

1,293,824. Weed-Puller. Louis H. Ludwig, Waukegan, Ill. Filed April 4, 1916, Serial No. 88,811. Renewed July 1, 1918.

1,293,849. Metal Ware. Frank Massing, Cleveland, Ohio, assignor, by mesne assignments, to The Griswold Manufacturing Company, Erie, Pa. Filed Oct. 29, 1915.

1,293,859. Oil-Can. Max H. Misfeldt, Malta, Mont., assignor of one-half to Gustav F. Thompson, Malta, Mont. Filed April 27, 1918.

1,293,877. Firearm. Charles A. Nelson, Utica N. Y., assignor to Savage Arms Corporation, Utica, N. Y., a corporation of New York. Filed July 17, 1917.

1,293,879. Combination Padlock. Bernhard A. Neumann, Kansas City, Kans., assignor of one-half to William H. Tigerman, Kansas City, Mo. Filed April 15, 1918.

1,293,880. Wire-Twister. John H. Neville, Portland, Oreg. Filed Nov. 5, 1914.

1,293,911. Screen-Door Latch. James R. Plants, Claysville, Pa. Filed Aug. 14, 1918.

1,293,953. Clothes-Hanger. Joseph A. Shoemaker, Brooklyn, N. Y. Filed March 15, 1917.

1,293,964. Electric Heater and Cooker. Perl Monroe Spink, Worthington, Minn. Filed Feb. 23, 1918.

1,293,966. Combination-Tool. Lee Springer, Hardin, Mont. Filed April 28, 1917.

WEEKLY REPORT OF TRADE AND THE MARKETS

STEEL PRODUCERS AGREE TO LOWER PRICES AND MAINTAIN WAGES.

As the outcome of a conference between steel manufacturers and the Industrial Board of the Department of Commerce, held this week at Washington, D. C., substantial reductions in the prices of finished steel products have been put into effect. A full account of the formation and plan of procedure of the Industrial Board of the Department of Commerce was given on pages 23 and 24 of last week's issue of AMERICAN ARTISAN AND HARDWARE RECORD. It was organized with the intention of including reasonable price reductions in order to bring about a stabilization of industry throughout the country. Its first big achievement is seen in the action of the steel trade in adopting basic prices to hold for one year.

The new prices are as follows:

Pig iron, basic, reduced from \$30 to \$25.75 per gross ton.

Four inch billets reduced from \$43 to \$38.50 per gross ton.

Two inch billets, reduced from \$47 to \$42 per gross ton.

Bars, reduced from \$2.70 to \$2.35 per hundred pounds.

Plates, reduced from \$3 to \$2.65 per hundred pounds.

Structural steel, reduced to \$2.45 per hundred pounds.

Judge Elbert H. Gary, chairman of the special committee of steel manufacturers, said there would be no reduction below these prices and that wages will not be lowered in the steel mills. He said:

"It is expected that the prices during 1919 will not be any lower, and it is the present intention to make no decrease in wages, except perhaps at some mills where a contract between employers and employees based on a sliding scale agreement is in effect.

"The price of iron ore, f. o. b. Lake Erie ports, will not be reduced except in case of reductions of freight rates. In such case the price of iron ore will be reduced proportionately."

The prices announced by Judge Gary will be the basis of a general price-fixing arrangement for semi-finished products in the steel industry. The steel men are confident that the reduction will bring about a steady revival of building, and that industry all over the United States will be greatly benefited by the new agreement.

STEEL.

There is talk of a big order for rails and it is possible that such an order may be forced through. The trade, however, does not expect much in the way of demand for new equipment to develop. The equipment

makers have already been burned and they are not anxious to repeat the experience. The rail order to meet the urgent needs would have to total about 2,500,000 tons. The capacity of the trade is something around 4,000,000 tons.

As for building, the outlook is good, provided there is no interference in the way of price fixing in rents. The trade produced much structural steel last year, much more than is generally believed, and looks for an increase in demand as a result of the conference this week. There is no pessimism in the trade in general. The element of doubt exists as to the development of a demand that will keep the trade going at approximately the rate that prevailed during the middle months of last year, or even at the present rate, which is much higher than the country has been led to believe. There is no doubt that, using the pre-war rate of production as a measure, the trade will continue to produce the normal amount of steel, even under the most extreme conditions.

COPPER.

The odds and ends of copper which were being pressed for sale by small producers in need of funds is gradually being absorbed and there is now every indication that prices will begin to work higher soon. Leading producing interests seem to be unanimous in the determination to refuse to sell their stocks on hand for less than cost, and at the present time the market price probably is two cents a pound lower than the average cost of all existing surplus supplies.

Although the volume of buying has been smaller during the past four months than previously, a considerable amount of copper has been going into consumption. Nearly all of the consumers had some stocks of metal on hand and also had made purchases for future delivery at the time the armistice was declared. They also have bought a large tonnage in the aggregate of scrap copper and brass and wire mills have continued operating as a rule on one-half time or better. The generally accepted belief, therefore, that all production since the middle of November has been added to surplus accumulations is very much in error. Indeed, it is improbable that the world's stocks are 200,000,000 pounds greater now than they were three or four months ago.

The attitude of the producing companies is such as to inspire buyers of copper with confidence. By discontinuance of mining operations on the one hand and curtailment on the other hand, production has been reduced almost 50% already, and unless there is an immediate increase in the buying demand output will be cut down still further. This is a situation which should convey to the minds of the consumers the conviction that they will be unable to make purchases later on at any lower prices.

TIN

There is a rumor that imports of tin ore and concentrates are to be allowed after June 1st, and this is the date the trade expects the present embargo on pig tin imports to end. Some, however, are positive that the Government stocks will be distributed by May 1st, and imports then will be allowed.

The routine character of the tin market continued undisturbed and the only interest displayed at present is seen in the question how soon the Government control of imports will end. As this depends entirely on the completion of the distribution of the Government holdings of tin, opinions differ widely and all dates are heard from May to June. There are offerings of April shipments from the Straits in the market at 52½ cents, or 20 cents below the fixed Government price, and as such shipments would not reach here before June it is very likely that some importers will take the risk of buying those options.

Government control is still in existence and will in all probability not be released until all the Government holdings of tin are disposed of. While those holdings at the beginning of the control were given at 10,000 tons, no statistics were published as to the present holdings, but it is estimated that about 6,000 tons in all were taken under allocations to the large consumers, which would leave still 4,000 tons for distribution. Under normal times this would be sufficient for one month's supply, but as the industry at present is working a heavy curtailment it might take two months longer before all the tin is sold and the trade can expect a free market.

LEAD.

While the leading interest's official price remains at 5.00 cents East St. Louis, business is so dull that second hands are offering to sell April at 4.95 cents East St. Louis and even this price is reported to have been shaded.

SOLDER.

Prices of solder in the Chicago market are as follows: Warranted 50-50, per pound, 39.5 cents; Commercial, 45-55, per pound 36.2 cents; Plumbers', per pound, 32.9 cents.

SPELTER.

The week opened with a decided improvement in demand both from consumers and dealers, and as simultaneously producing interests, who have been indifferent about meeting the market, came out as sellers at 6.15 cents f.o.b. East St. Louis basis, a good general business has been done today for March, April and May deliveries at this price. If the demand continues, the prospects are for a firm market, while there is a good prospect that the new lower prices for iron and steel will lead to a good business in galvanized iron. As producers of galvanized iron are known to have very small stocks of spelter they would probably cover the metal against all galvanized iron orders that they book.

The spelter market looks better than it has for some time as regards demand for the metal, both for present and in the future. It is thought that producers must

have got some slight concession in ores or labor to make them sellers but it may be they had become tired of waiting for orders. It will be interesting to see what their attitude will be now that buying orders are improving.

Last week prices for zinc ores were cut from \$2.50 down to \$1.00 per ton for all grades. This brought the range for zinc ores to \$37.50 to \$42.50 with the exception of a few lots of first grade ores which were said to have sold on previous week's market. Calamine ores were practically unchanged at \$25 to \$30 per ton.

SHEETS.

An indication of the prevailing prices of sheets is to be found in the bimonthly sheet settlement held recently in Youngstown, Ohio. A cut was announced in the wages of mill men of 10½ per cent for sheets and of 8 per cent for tin plates would be made. The cut is the first that has taken place since prices for mill products began to rise under war conditions. When the January settlement was made there was an advance of 7 and 7½ per cent respectively. The most recent settlement was based on a basis of \$4.90 per sheets and \$7.45 for tin plate. The January settlement was made on the basis of \$5.25 for sheets and \$7.85 for tin plate. The latest settlement will remain in force until May.

TIN PLATE.

Trading in tin plate, at no time really active since last fall, has come almost to a halt in the past week or so. Possibility of lower prices naturally discourages fresh commitments of any considerable size and also is making consumers somewhat indifferent about giving specifications against old business. Some of the fairly large consumers carried over a considerable stock from last year on account of the failure of the pack of perishable foods to come up to anticipated proportions and these interests have not been able to reduce these accumulations owing to a cautious attitude on the part of packers and canners.

OLD METALS.

Wholesale quotations in the Chicago district which may be considered nominal, are as follows: Old steel axles, \$28.00 to \$30.00; old iron axles, \$28.00 to \$30.00; steel springs, \$17.00 to \$17.50; No. 1 wrought iron, \$15.00 to \$15.50; No. 1 cast, \$21.00 to \$21.50, all net tons. Prices for non-ferrous metals are as follows, per pound: Light copper, 10½ cents; light brass, 6 cents; lead, 3½ cents; zinc, 3¾ cents; cast aluminum, 17 cents.

PIG IRON.

As a consequence of the conference between steel producers and Secretary Redfield's newly formed Industrial Board of the Department of Commerce, a price of \$25.75 per gross ton has been agreed upon for pig iron. This is expected to have a very favorable effect upon the iron market and to stimulate business all along the line. Inasmuch as the basic prices are agreed upon to hold for one year, doubt and uncertainty will be removed and buyers will be able to proceed upon a firm foundation.

Current Hardware and Metal Prices.

AMERICAN ARTISAN AND HARDWARE RECORD is the only publication containing Western Hardware and Metal prices corrected weekly.

METALS.		LEAD.		AUGERS		BEATERS.	
PIG IRON.		American Pig.....\$5 50		Boring Machine.....60%		Carpel. Per doz.	
Basic.....\$34 40		Bar.....6 00		Irwin's.....25%		No. 7 Tinned Spring Wire...\$1 10	
Northern Fdy., No. 2...34 00		Sheet.		Carpenter's Nui.....50%		No. 8 Spring Wire coppered...1 50	
Southern Fdy., No. 2...40 25		Full coils.....per 100 lbs. \$8 50		Hollow.		No. 9 Preston.....1 75	
Lake Sup. Charcoal...38 70-39 00		Cut coils.....per 100 lbs. 8 75		Bonney's.....per doz. 30 00		Egs. Per doz.	
Malleable.....34 50		TIN.		Stearns, No. 3.....60 00		No. 50 Imp. Dover.....\$1 10	
FIRST QUALITY BRIGHT		Pig tin.....76 1		Post Hole.		No. 102 " " tinned...1 35	
TIN PLATES.		Bar tin.....Nominal		Iwan's Post Hole and Well.....25%		No. 150 " " hotel...2 10	
IC 14x20.....112 sheets Per box		HARDWARE.		Vaughan's, 4 to 9-in...per doz.\$13 00		No. 10 Heavy hotel tinned...2 10	
IX 14x20.....15 75		ADZES		Ship.		No. 13 " " " 3 30	
IXX 14x20.....17 55		Carpenters'.		Ford's, with or without screw, Net list		No. 15 " " " 3 60	
IXXX 14x20.....18 80		Plumbs.....Net		AWLS.		No. 18 " " " 4 50	
IXXXX 14x20.....20 10		Coopers'.		No. 3 Handled.....per doz. \$0 65		Hand. 8 9 10 12	
IC 20x28.....28 20		Barton's.....Net		No. 1050 Handled...1 40		Per doz.\$11 50 13 00 14 75 18 00	
IX 20x28.....31 50		White's.....Net		Shouldered, assorted 1 to 4,		Moulders'.	
IXX 20x28.....35 10		Railroad.		Patent asst'd, 1 to 4.. 4 00		12-inch.....Per doz. 20 00	
IXXXX 20x28.....40 20		Plumbs.....Net		Harness.		BELLS.	
COKE PLATES.		AMMUNITION.		Common.....1 05		Call.	
Cokes, 180 lbs.....20x28 \$17 40		Caps, Percussion—per 1,000.		Patent.....1 00		3-inch Nickeled Rotary Bell,	
Cokes, 200 lbs.....20x28 17 70		F. L., Waterproof, 1-10s...20&2 1/2%		Peg.		Bronzed base.....per doz. \$5 50	
Cokes, 214 lbs.....IC 20x28 18 30		G. D.....20&2 1/2%		Shouldered.....1 60		Cow.	
Cokes, 270 lbs.....IX 20x28 20 70		Musket.....20&2 1/2%		Patented.....75		Kentucky.....30%	
BLUE ANNEALED SHEETS.		Shells, Loaded.		Scratch.		Door.	
No. 10.....per 100 lbs. \$5 17		Loaded with Black Powder. 20&2 1/2%		No. 1S, socket hand'id. per doz. 2 50		New Departure Automatic...\$ 7 50	
No. 12.....per 100 lbs. 5 22		Loaded with Smokeless Powder,		No. 344 Goodell-Pratt.		Rotary.	
No. 14.....per 100 lbs. 5 27		medium grades.....20&2 1/2%		List, less.....35-40%		3 -in. Old Copper Bell.....6 00	
No. 16.....per 100 lbs. 5 37		Loaded with Smokeless Powder,		No. 7 Stanley.....2 25		3 -in. Old Copper Bell, fancy. 8 00	
ONE PASS COLD ROLLED BLACK.		high grade.....20&2 1/2%		AXES.		3 -in. Nickeled Steel Bell...6 00	
No. 18-20.....per 100 lbs. \$6 02		Winchester.		Boys' Handled.		3 1/2-in. Nickeled Steel Bell...6 50	
No. 22-24.....per 100 lbs. 6 07		Smokeless Repeater Grade. 20&2 1/2%		Niagara.....12 50		Hand.	
No. 26.....per 100 lbs. 6 12		Smokeless Leader Grade...20&2 1/2%		Broad.		Hand Bells, polished.....15%	
No. 27.....per 100 lbs. 6 17		Black Powder.....20&2 1/2%		Plumbs, West, Pat.....List		White Metal.....15%	
No. 28.....per 100 lbs. 6 22		U. M. C.		Can. Pat.....\$69 00		Nickel Plated.....10%	
GALVANIZED.		Nitro Club.....20&2 1/2%		Fire-en's (handled),		Swiss.....15%	
No. 16.....per 100 lbs. \$6 82		Arrow.....20&2 1/2%		per doz. 21 00		Silver Chime.....10%	
No. 18-20.....per 100 lbs. 6 97		New Club.....20&2 1/2%		Single Bitted (without handles).		Miscellaneous.	
No. 22-24.....per 100 lbs. 7 12		Gun Wads—per 1000.		Prices		Church and School, steel alloys...30%	
No. 26.....per 100 lbs. 7 27		Winchester 7-8 gauge.....\$2 25		Warren Silver Steel.. on application		Farm, lbs. 40 50 75 100	
No. 27.....per 100 lbs. 7 42		" 9-10 gauge.....1 94		Warren Blue Finished. "		Each.....\$3 00 3 75 5 50 7 25	
No. 28.....per 100 lbs. 7 57		" 11-28 gauge.....1 63		Matchless Red Pole.....\$11 50		BEVELS, TEE.	
No. 30.....per 100 lbs. 8 07		Powder. Each		Double Bitted (without handles).		Stanley's rosewood handle, new	
POLISHED SHEET STEEL.		DuPont's Sporting, kegs. ...\$11 25		Warren's Natl. Blue, 3 1/2 to 4 1/2		list.....Nets	
No. 24.....per 100 lbs. \$7 82		" 1/2 kegs. 5 90		lb. Prices on application		Stanley's iron handle.....Nets	
No. 26.....per 100 lbs. 7 87		" 1/2 kegs. 3 10		The above prices on axes of 3 to 4 lbs.		BINDING CLOTH.	
No. 27.....per 100 lbs. 7 92		DuPont's Canisters, 1-lb. 56		are the base prices.		Zincd.....55%	
No. 28.....per 100 lbs. 8 02		" 1/2 lb. 32		BAGS, PAPER NAIL.		Brass.....40%	
SMOOTH SHEET STEEL.		" 1/2 lb. 22		Pounds.....10 16 20 25		Brass, plated.....60%	
Per 100 lbs.		" Smokeless, drums. 43 50		Per 1,000.....\$5 00 6 50 7 50 9 00		BITS.	
Wood's Smooth No. 20.....\$7 27		" kegs. 22 00		BALANCES, SPRING.		Auger.	
" " No. 22-24.....7 32		" 1/2 kegs. 11 25		Pelouze.....20%		Jennings Pattern.....20%	
" " No. 25-26.....7 37		Hercules "E.C." and "Infallible"		BARS, CROW.		Ford Car.....List plus 5%	
" " No. 27.....7 42		50 can drums.....43 50		Pinch or Wedge Point, per cwt...\$8 50		Ford's Ship.....35%	
" " No. 28.....7 52		Hercules "E. C." kegs.....22 00		BASKETS.		Irwin.....15%	
PATENT PLANISHED SHEET		Hercules "E. C." 1/2 kegs.....11 25		Small Willow.....per doz. 15 00		Russell Jennings.....15%	
IRON.		Hercules "Infallible," 25 can		Medium Willow.....17 00		Standard Double Cut.	
Patent Planished Sheet Iron,		drums.....22 00		Large Willow.....20 00		Doz. \$1 10—\$1 60	
100 lbs., base No. 28.....\$11 55		Hercules "Infallible," 10 can		Clothes.		Countersink.....Doz. 1 80	
BAR SOLDER.		drums.....9 00		Galvanized Steel, 1/2 bu. 1 bu. 1 1/2 bu.		Reamer.	
Warranted, 50-50.....per lb. 39.50		Hercules "E. C." 1/2 kegs.....5 75		Per doz.....\$11 50 \$17 00 \$22 00		Standard Square.....Doz. 2 50	
Commercial, 45-55.....36.20		Hercules "E.C." and "Infallible"		Screw Driver.		American Octagon...2 50	
Plumbers'.....32.90		canisters.....1 00		No. 1 Common.....1 40		No. 26 Stanley.....1 75	
SPELTER.		Hercules W. A. .30 Cal. Rifle,					
In slabs.....70		canisters.....1 25					
SHEET ZINC.		Hercules Lightning Rifle,					
Cask lots.....13c		canisters.....1 25					
Less than cask lots.....13c to 13 1/2c		Hercules Unique Rifle, canisters 1 50					
COPPER.		Hercules Bullseye Revolver,					
Copper sheet, base.....2 1/2		canisters.....1 00					
		ANVILS.					
		Trenton, 70 to 80 lbs.....9 1/2c per lb.					
		Trenton, 81 to 150 lbs.....9 1/2c per lb.					
		ASBESTOS.					
		Board and Paper, up to 1/16" 17c per lb.					
		Thicker.....18c per lb.					

BLACKING, STOVE. (See Polish)		Well.		Picture Chains.		Saw Filers.	
BLADES, SAW.		Oak, Wrought Iron Riveted		Light Brass, 3 ft. per doz. \$1 25		Wentworth's, No. 1, \$12.50; No. 2,	
Butcher's.		Top Ears. per doz. \$8 00		Heavy Brass, 3 ft. " 1 75		\$18.25, No. 3, \$16.25.	
Standard, 1 & 1 1/2-in. Nets		BURRS, RIVETING.					
Clock Spring. "		Copper Burrs only. 25% above list					
Star. "		Tinners' Iron Burrs only. 30%					
Hack.		BUTTS.		Safety Chain.		CLAWS, TACK.	
Atkins. 5%		Cast Iron. 7 1/2%		Brass. 5%		Wood hdl. No. 10. per doz. \$0 93	
Star. Nets		Wrought Brass (New List). Plus 5%				Forged steel, wood hdl. \$1 75	
Wood.		Wrought Steel, Bright. 40%				Solid steel. " 2 40	
Disston		Wrought Steel, Japanned. Net prices				Giant. " 50	
Nos. 6 66 26		CALIPERS.		Sash Chain. (Morton's)		CLEANERS.	
\$8 00 \$8 50 \$8 00		Double. Nets		Steel, per 100 ft.		Drain.	
Atkins		Inside and Outside. "		0. \$2 50		Iwan's Adjustable. 40%	
Nos. 2 14 18		Wing. "		2. 3 10		Iwan's Stationary. 30%	
\$3 85 \$6 50 \$4 75		CALKS.		1. 3 60		Pot.	
BLOCKS.		Logger's Boot.		Champion Metal.		Wire. per doz. \$0 75	
Wooden. Plus 10%		(Lufkin R. Co.'s), per M. \$7 00		0R. 5 40		Side-Walk.	
Tackle.		Toe.		2R. 5 60		Steel. per doz., Net price	
Iron Strapped. Plus 10%		Blunt and medium, 1 prong,		1R. 7 75		CLEAVERS.	
BOARDS.		per 100 lbs. \$6 00		Champion Metal—Extra Heavy.		Family.	
Wabash Crystal. Net Prices		Sharp, 1 prong, per 100 lbs. 6 50		1H. 9 50		Beatty's, inch 7 8 9 10	
Wabash Oriental. "		CANS.		Cable Sash Chains.		Per doz. \$27 00 29 00 33 00 36 00	
Wabash Mosaic. "		Milk.		Steel. List Net Plus 15%		CLEAVISES.	
Wabash Delft Enameled. "		Elgin. 5 8 10				Malleable. 10c lb.	
Wabash Art Inlay. "		Gals. \$4 00 \$5 15 \$5 15				CLIPPERS.	
Wash.		Iowa Pattern. 5 8 10				Bolt. \$2 25 & 6 00	
No. 760, Banner Globe, (single)		Gals. \$4 00 \$5 15 \$5 15				CLIPS.	
per doz. \$3 25		CAN OPENERS.				Axle.65 & 5%	
No. 652, Banner Globe, (single)		See Openers.				Damper.	
per doz. 6 75		CAPS, GUN.				Standard. per doz. 70c	
No. 801, Brass King. 8 25		See Ammunition.				Troy. " 38c	
No. 860, Single—Plain Pump 6 25		CARPET STRETCHERS.				Hame. " 50c	
BOBS, PLUMB.		See Stretchers.		CHALK, CARPENTERS'		CLOTH.	
Carpenters'.		CARRIERS.		Blue. per gro., \$1 50		Emery.	
No. 2, iron. per doz. \$1 15		Hay.		Red. " 1 50		Star. New Prices	
No. 00, " 1 90		Diamond, Regular. each, Nets		White. " 1 45		B. & A. Prices on	
No. 0, " 3 85		Diamond, Sling. "		Common White School		Hardware Wire—	
No. 3, lead. 4 35		CARTRIDGES.		Crayon. 25c		Full rolls (100 ft.) application	
No. 4, " 6 00		See Ammunition.		CHARCOAL.		12 Mesh, galvanized. "	
No. N36, nickel plat'd. 2 40		CASTERS.		In bags. per bag \$1.70		14 " " " " " "	
No. 5, brass. 5 25		Standard—Ball Bearing. 50 & 10%		CHECKS, DOOR.		16 " " " " " "	
BOLTS.		Bed. 55%		Blount. Net list		Screen Wire. Prices on application.	
Carriage, Machine, etc		Common Plate.		Corbin. "		12 mesh, painted, per 100 sq. ft.	
Carriage, 1/2 x 6 and sizes smaller,		Brass Wheel. 15%		CHIMNEY TOPS.		COLLARS, STOVE PIPE.	
and shorter. 40%		Iron and porcelain wheels, new		Iwan's Volcano. 40%		Lacquered. Inches 5 6 7	
Carriage, sizes larger and longer		list. 50%		CHISELS.		Fancy pattern,	
than 1/2 x 6. 20 & 5%		Philadelphia Plate, new list. 50%		Box.		per doz. 80c 85c \$1 15	
Machine, 1/2 x 4 and sizes smaller		Martin's. 40%		Inches. 12 14		COMPASSES.	
and shorter. 40 & 10%		CATCHERS, GRASS.		Round, per doz. \$5 25 5 75		Carpenters' 15%	
Machine, sizes larger and longer		No. 160S, per doz. \$12 25		Flat, per doz. 7 25 8 25		COPPER—See Metals.	
er than 1/2 x 4. 25 & 5%		No. 165S, " 14 01		Cold.		COPPERS—Soldering.	
Stove. 60 & 10%		CEMENT, FURNACE.		Good quality, 1/2 in. and		3 lb. and heavier. per lb. 55c	
Tire. 40%		American Seal, 5 lb. cans, net \$0 45		larger. per lb. 28c		2 1/2 lb. " 56c	
Mortise, Door.		" " 10 lb. cans, " 90		Smaller size, per doz. Nets		2 lb. " 57c	
Gem, iron. 5%		Pecora, 5 lb. cans. 45		Socket, Firmer.		1 1/2 lb. " 58c	
Gem, bronze plated. 5%		" 10 lb. cans. 90		Ohio. Price on Application		1 lb. " 61c	
Barrel.		" 25 lb. cans. 1 87		Socket, Framing.		CORD.	
Cast. Nets		CHAIN AND CHAINS.		Ohio. Price on Application		Picture.	
Wrought. "		Breast Chains.		Tanged, Firmer.—Barton's.		White Wire. 70 & 10%	
Wrought, bronzed. "		Doubleslack. doz. pairs, \$8 50		With handles. Net list		Sash.	
Flush.		With Covert Snaps " 5 80		Choppers, See Cutters, Meat.		Sampson Spot, No. 7. per doz. \$21.25	
Wrought. "		With Slide " 5 00		CHUCKS, DRILL.		Revenoc No. 7. per doz. \$14.40	
Spring.		Without Slide. 4 60		Goodell's, for Goodell's Screw		CORKSCREWS.	
Wrought. "		Cable Coil Chains		Drivers. List less 35-40%		Walker's. 30%	
Wrought, heavy. "		Inch. 1 1 1/2		Yankee, for Yankee Screw		Williamson's Regular. 35 & 11 1/2%	
Square.		Per 100 lbs. 7 75 7 50 7 50		Drivers. 6 00		Williamson's Forged Worm. 40%	
Wrought. "		BRACKETS.		CHURNS.		COTTERS, SPRING.	
Angular.		Hay Rack.		Anti-Bent Wood,		All sizes (new list) 80%	
Miller's Falls. per doz. \$23 00		Wenzelmann's No. 1, per doz.		Gal. 3 90 7 60 10		COUPLINGS, HOSE.	
Sill borers, No. 51. 34 00		sets. \$18 00		Each. \$3 50 4 60 4 85		Brass. per doz. \$2 25	
" 52. 39 50		Wenzelmann's No. 2, per doz.		Belle, Barrel.65 & 7 1/4%		COVERS, WAGON—See Tents.	
Bung.		sets. 19 20		Common Dash,		CRADLES, GRAIN.	
Enterprise Mfg. Co.'s No. 1. 10%		Shelf.		Gal. 5 7		Morgan's Grapevine. per doz. \$45 00	
No. 2. 10%		Wrought Steel. 40%		Per doz. 17 00 19 00			

CRAYONS—See Chalk.		ELBOWS—Conductor Pipe.		Wood Pails.		HANGERS.	
CROWBARS.		Galvanized Steel, Tin and Terne, Round Corrugated.		Frazer's, 15 lb. \$1.00; 25 lb. \$1.50 each		Barn Door.	
Pinch or Wedge Point.....per lb. 8c		Size.....Doz.		Hub Lightning, 15 lb. 90c; 25 lb. \$1.21 each.		U. S. Rolled Bearing.....12 1/2%	
CUTTERS		2-inch.....\$ 3 60		Tin Cons.		Matchless.....12 1/2%	
Glass.		3-inch.....4 32		Frazer's		Warehouse Tandem, No. 44.....33 1/2%	
Woodward.....40%		4-inch.....7 20		1 1/2 lb. per doz.....\$1 75		Conductor P.	
Meat.		5-inch.....15 00		3 lb. per doz.....3 25		Iwan's Perfection.....50%	
Enterprise—Nos. 5 10 12		6-inch.....18 00		GRINDSTONES.		Eave Trough.	
Each \$2 50 \$4 25 \$3 75		Subject to 60% discount.		Family.		Imperial.....Net list	
Nos. 22 32		EMERY, TURKISH.		Inches.. 7 8 10 12		Wire.....List plus 5%	
" 6 50 8 50		Size.....5-lb		Per doz..20 50 21 75 26 25 30 50		Garage Door.	
Pipe.		Flour.....15c 8c 7 1/2c		Loose.		Right Angle.....50&10%	
Saunders', No. 1 2 3		EYES.		Per ton.....Price on application		Sliding Folding.....50%	
Each.....\$1 85 2 75 6 75		Bright Wire Screw—See Ooods, B. W.		Mounted.		Receding.....50%	
Slow and Kraut.		Drifting Pick.....60, 10&5%		Ball Bearing.....1 2 3		Parlor Door.	
4-knife Kraut.....\$20 00-55 00		Hooks and Eyes—		Each.....\$4 75 5 00 5 25		Acme.....per set, \$3 75	
3-knife Kraut, 8x27 in.. 13 00-18 00		Brass, 1 1/2" No. 60...per gross, \$3 50		GUN WADS.		Ives' Improved....." 3 40	
1-knife Slaw.....2 50		Iron " " 50... " 1 60		(See Ammunition).		Lane's Standard....." 3 50	
2-knife Slaw.....3 00		FASTENERS, STORM SASH.		GUNS.		Lane's New Model... " 3 10	
Washer.....11 00		Shroeder's.....per doz. \$1 50		Iver Johnson Champion Single		Le Roy Noiseless.....40&10%	
DAMPERS, STOVE PIPE.		Sensible....." 3 00		Barrel Shot Guns.....Net Prices		Richards.....25%	
Ideal		FILES AND RASPS.		Double Barrel, Hammerless. "		Advance.....40&10%	
3".....\$1 00		Delta		HATCHETS.		HASPS.	
4".....1 05		Delta.....30%		Crescent.....50%		Hinge, Wrought.... Add 50% to list,	
5".....1 15		Swiss.....List plus 25%		Cast Claw.....per doz. \$1 50@1 85		With Staples—See Staples.	
6".....1 25		Utility....." net.		Cast Shingling... " 1 50@1 85		HAY KNIVES.	
7".....2 20		Nicholson's—		Germantown.....7 1/2%		See Knives.	
8".....3 75		American.....50&2 1/2%		HAY RACK BRACKETS		HINGES.	
10".....6 00		Arcade.....50&2 1/2%		Wenzleman's No. 1 per doz. sets, \$18 00		Clark's Gravity	
DIES AND STOCKS.		Black Diamond.....40%		Wenzleman's No. 2 " " 19 20		No. 1.....per doz. sets, \$2 25	
Discount.....New List		Eagle.....50&2 1/2%		Blind.		No. 3....." " 5 75	
DIGGERS.		Great Western.....50&2 1/2%		Clark's.....1 2 3		Gate.	
Post Hole.		Kearney & Foot.....50&2 1/2%		Hgs & Lch, doz. \$5 50 7 00 9 75		Clark's.....1 2 3	
Eureka.....per doz. \$14 50		McClellan.....50&2 1/2%		Hinges only " 4 75 5 50 8 00		Hgs & Lch, doz. \$5 50 7 00 9 75	
Iwan's Split Handle (Eureka)		Nicholson.....40%		Latches only. 1 90 1 90		Screen Door.	
4-ft. Handle.....per doz.. 14 00		J. Barton Smith.....50&2 1/2%		Cast Iron.....gross \$10 00		Steel....." 7 00	
7-ft. ".....20 00		X-F Swiss Pattern...List plus 10%		Spring.		Chicago.....Add 12 1/2% to list.	
Iwan's Perfection (Atlas) " 16 00		Simonds'.....50%		Columbia Dbl. Acting...40&10&5%		Gem.....25%	
Iwan's Hercules pattern " 16 15		Disston's.....50&2 1/2%		Ideal Detachable...per gro. \$11 00		Ideal Detachable...per gro. \$11 00	
See also Augers—Post Hole.		Heller's.....60&10%		Matchless.....40%		New Idea.....per gro. \$7 20	
Dividers, Wing......25%		FORKS.		Oxford.....20%		Wrought Iron.	
DOOR CHECKS—See Checks.		Barley.		New Lists.....		Light Strap Hinges.....15%	
DOORS, SCREEN.		Steel, new list.....New Prices		Heavy Hammers and Sledges.		Heavy Strap Hinges.....25&5%	
1-in. 4-panel, painted.....Net Prices		Hay.		Under 5 lbs.....50%		Light T Hinges.....15&5%	
1 1/2-in. 4-panel, painted.....		2-tine.....New prices		5 lbs. and over.....50&10%		Heavy T Hinges.....20&5%	
1 1/2-in. 2-panel, natural pine, fancy.....		3- ".....New prices		Masons'.		Extra Heavy T Hinges.....25%	
DOOR HANGERS—See Hangers.		4- ".....New prices		Single and Double Face.....50%		Screw Hook and Strap.	
DRILLS.		Digging.....New prices		HANDLES.		6 to 12 in.....per 100 lbs. \$7 75	
Blacksmiths' Twist. (New List).....40%		Scoop.....New prices		Auger.		14 to 20 in....." 7 50	
Breast.		Header.		Common Assorted.....per doz. \$0 75		22 to 36 in....." 7 25	
Millers Falls No. 12.....Each, \$46 00		3-tine.....New prices		Pratt's Adjustable, Nos. 1 & 2, per doz.....6 00		Screw Hook and Eye.	
" 112....." 26 00		4- ".....New prices		Ives' Adjustable.....per set, 1 35		1 in.....per doz. pair \$2 60	
Hand.		Manure.		Axe.....30%		1 1/2 in....." 3 50	
Goodell's Automatic.		4-tine.....New prices		HAMMERS, HEAVY.		1 in....." 5 00	
Nos. 01 03		FREEZERS—ICE CREAM.		Heavy Hammers and Sledges.		HOES.	
Per doz. 12 00 14 40		White Mountain 1-quart.....@		Under 5 lbs.....50%		Garden.....Net	
Goodell's Single Gear, per doz. 15 75		" " 2 ".....@		5 lbs. and over.....50&10%		Grub.	
Goodell-Pratt No. 4 1/2 per doz. list, less.....35-40%		" " 4 ".....@		Masons'.		Extra.....New prices	
Goodell-Pratt No. 379 per doz. list, less.....35-40%		Arctic.....1 ".....@		Single and Double Face.....50%		Hazel.....per doz. New prices	
Reciprocating.		" " 2 ".....@		HANDLES.		Ladies' and Boys'.....New prices	
Goodell's.....per doz. 26 00		" " 4 ".....@		Auger.		Mortar.....New prices	
DRIVERS, SCREW.		" " 6 ".....@		Common Assorted.....per doz. \$0 75		Planter's Eye.....New prices	
Standard.....Nets		GAUGES.		Pratt's Adjustable, Nos. 1 & 2, per doz.....6 00		Weed.....New prices	
Lock Ferrule....."		Cream Pail.		Ives' Adjustable.....per set, 1 35		HOLLOW WARE—See Ware.	
Champion....."		Fairmount.....per doz. \$3 75		Axe.....30%		HOOKS.	
Champion Pattern....."		Marking, Mortise, etc.....Nets		Chisel.		Awning, No. 60.....per gro. 50%	
Clark's Interchangeable....."		Wire.		Hickory, Tanged, Firmer, Assorted, 55c; Large, 85c per doz.		Bell.	
Edison....."		Disston's.....25%		Hickory, Socket Firmer, Assorted, 70c; Large size, 80c per doz.		Brown's.....70&5%	
Reed's Lightning....."		GIMLETS.		Coal Pick.....40%		Jones's.....65&5%	
Goodell's Spiral....."		Discount.....35@40%		Drifting Pick.....40%		Bench.	
Yankee Ratchet....."		Bulk.		File, assorted, 30c; Large, 35c per doz.		See Stops, Bench.	
" Spiral....."		B Amber.....per lb. 35c		Hammer.			
EAVES, TROUGH.		A White....." 40c		Adze Eye.....per doz. 40 to \$1 00			
60% off Standard List.		H. S. Amber....." 32c		Blacksmiths'.....45c@1 00			
ELBOWS—Stove Pipe.		Liquid.		Machinists'.....50c@1 00			
1-piece Corrugated, Uniform.		Army & Navy.....40%		Hay and Manure Fork.....25%			
Doz.		Le Page's—		Screw Driver.			
5-inch.....\$1 40		List "A".....37 1/2%		Assorted....." 60			
6-inch.....1 50		List "B".....33 1/2%		Large....." 90			
7-inch.....1 90		List "C".....25%		Shovel and Spade.....25%			
Uniform, Color Adjustable		GREASE, AXLE.					
Doz.		Wood Boxes.					
5-inch.....\$1 35		Frazer's.....per gro. \$13 00					
6-inch.....1 45		Hub Lightning.....7 50					
7-inch.....1 80							

[illegible]

PARERS.	Tinners'.	PUNCHES.	SAWS.
Apple.	Hollow.....Net list	Conductors.	Band.
Goodell's.....per doz. \$10 80	Solid.....each, 10c	No. 22.....per doz. \$3 00	E. C. Atkins & Co. Prices on applic'n
Turntable....." 11 40		Machine.....per lb. 25	Buck.
White Mountain....." 8 40		Saddlers'.	Disston's.....New nets
Reading, No. 78....." 11 40		Common.....per doz. 1 50 to 5 00	Jackson's.....New nets
Potato.	PLUMBS AND LEVELS.	PUTTY.	Butchers'.
Goodsell's Saratoga, 10 1/2 in., dz. 6 50	Common.....Nets	Strictly pure.....per 100 lbs. \$4 25	E. C. Atkins & Co. Prices on applic'n
Goodsell's Saratoga, 5 in., dz. 5 50	Cook's.....40%		Disston's.....New nets
	Davis' Iron.....25%		Circular.
	Davis' Inclinometer.....15%		E. C. Atkins & Co. Prices on applic'n
			Disston's.....New nets
			Hiles'.....New nets
			Simonds'.....New nets
			Compass.
			E. C. Atkins & Co. Prices on applic'n
			Common.....New nets
			Disston's.....New nets
			Cross-Cut.
			E. C. Atkins & Co. Prices on applic'n
			Disston's.....New nets
			Simonds'.....New nets
			Dehorning.
			Disston's.....New nets
			Hack.
			Disston's.....New nets
			Simonds' Box Lots.....New nets
			Star.....New nets
			Hand and Rip.
			E. C. Atkins & Co. Prices on applic'n
			Disston's No. 7.....New nets
			Disston's Nos. 8, D8, 12, 76, 112,
			D100, and 120.....New nets
			Keystone.....New nets
			Keyhole.
			Disston's.....New nets
			Miter Box.
			E. C. Atkins & Co. Prices on applic'n
			Narrow Band.
			Simonds'.....New nets
			Panel.
			E. C. Atkins & Co. Prices on applic'n
			Disston's No. 7.....New nets
			Pruning.
			Disston's.....New nets
			Rift.
			Simonds'.....New nets
			Wood.
			E. C. Atkins & Co. Prices on applic'n
			Common.....New nets
			Clover leaf.....New nets
			SAW BUCKS—See Bucks.
			SAW SETS—See Sets
			SAW TOOLS—See Tools.
			SAW FRAMES.
			Common, plain.....per doz. \$1 50
			Common painted....." 2 10
			SCALES.
			Counter.
			Pelouze.....40&10%
			SCISSORS.
			Star.....60%
			SCOOPS.
			Grain.
			1 bu. "Hercules".....per doz. 3 70
			1 bu. "Hercules"....." 5 00
			SCRAPERS.
			Box.
			Triangular, No. 6.....per doz \$6 25
			Cabinet.
			Cast Steel, Nos. 2 1/2 x 5 3 x 5 3 1/2 x 6
			Per doz.....\$1 10 1 25 1 80
			Road.
			Cubic ft.....7 5 3
			With runners, ea.....\$7 00 6 50 6 20
			SCREEN DOOR HINGES.
			Cast iron.....gross, \$13 00
			Steel....." 9 50
			SCREWS.
			Bench.
			Iron, ins. 1 1 1/2 1 1/4 1 1/2
			\$9 75 11 50 13 75 21 50
			Wood, white maple.....per doz. 6 00
			Hand—Wood.
			Hand Rail.....35%
			Hand Rail.....22 1/2%
			Jack.....30-5%
			Lag or Coach—all sizes, gimlet
			pointed.....40%
			Saw—Centennial.
			Nos.....1 2 3 4
			Per doz.....47c 55c 75c 90c
			Wood.
			F. H. Bright.....70-10-10%
			R. H. Blued.....65-10-10%
			F. H. Jap'd.....62 1/2-10%
			F. H. Brass.....42 1/2-10-5%
			R. H. Brass.....40-10-5%
			R. H. Nickel Plated.....57 1/2-10%
			SCYTHES.
			Clipper, grass.....per doz. \$13 50
			Honest Dutchman....." 13 75

SETS.		SQUARES.		TAPES, MEASURING.		WARE.	
Nail.		Steel and Iron.		Asses' Skin.		Stove Hollow Ware.	
Square head..... per doz. \$1 25		Nets new list		Lufkin's Steel..... List Net		Plain or Unground..... 50%	
Cup point, knurled.. " 1 15		(Add, for bluing, \$3.00 per doz., net.)		Lufkin's Metallic. List to list plus 20%		Ground Ware..... 4%	
Rivet.		Mitre.		Lufkin's Pocket..... 10%		Enameled Ware..... 33 1/2%	
Farmers'..... per doz. \$2 10		Try and Bevel.....		THERMOMETERS.		Scotch Bowls..... 60 5/8%	
Tinners'..... 25%		Try and Miter.....		Tin Case..... per doz. 80c@ \$ 1 25		Country Hollow Ware, per 100 lbs. \$3 00	
Saw.		Fox's..... per doz. \$6 00		Wood Back..... " \$2 00@ 12 00		White Enameled Ware.	
Aiken's Pattern..... per doz. \$6 50		Winterbottom's..... 10%		Glass..... " 12 00		Maslin Kettles..... 50%	
Disston's Monarch..... " 7 20		SQUEEZERS, LEMON.		TIES.		Neverbreak Flat and Round	
Disston's X-Cut..... " 13 50		Common Wood..... per doz. \$0 70		Bale.		Bottom Kettles..... 45%	
Leach's..... " 80		Porcelain Lined, Wood..... " 1 25		Single Loop, carload lots..... 75&7%		Covered Ware	
Nash's Hand..... " 3 15		Boss, malleable iron..... " 1 20		less than car lots 70&15%		Tin'd and Turn'd..... 35&10%	
Nash's X-Cut..... " 4 20		Iron frame, porc'n bowl..... " 1 90		Cow—See "Chains."		Enameled..... 45&10%	
Stillman's Lever..... " 1 30		Iron Frame, glass bowl..... " 2 35		TOOLS, SAW.		Glue Pots.	
Stillman's X-Cut..... " 2 50		Little Giant, tin'd iron..... " 4 00		Disston's Universal..... 40%		Tinned..... Add 15% to list	
SHARPENERS, SKATE.		Drum, jappaned..... " 3 60				Enameled..... 30%	
Diamond..... per doz. \$1 60		Drum, nickel plated..... " 4 50				Cherry Blossom and Chrysolite. 50%	
Perfect..... 1 20		STAPLES.				WASH BOARDS—See Boards.	
SHAVES, SPOKE.		Blind.				WASHERS.	
Iron..... per doz. \$1 10@ 1 85		Barbed..... per lb. 21 @ 22c				Standard O. G. cast iron..... per lb. 34c	
Wood..... " 2 75@ 4 75		Butter Tub..... " 16 @ 19c				Wrought steel in 5-lb. boxes, per lb.:	
Stanley's..... Nets		Fence—				In. 3/16 1/2 5/16 3/4 1 1 1 1 1 1	
SHEARS.		Polished..... per 100 lbs. \$5 45				18c 16c 15c 13c 12c 11c 11c 11c	
Pruning.		Galvanized..... " 6 15				WEDGES.	
Buckeye, No. 1..... per doz. \$5 75		Netting.				Ax..... per doz. Nets	
Buckeye, No. 2..... " 7 40		Galvanized..... per 100 lbs. 6 50				Galling..... per lb. "	
California Pat., 9-in..... " 3 20		Wrought.				Saw..... 8 1/2	
California Pat., 10-in..... " 4 00		Wrought Staples, Hasps and				WEANERS.	
Draw Cut, No. 3..... " 13 75		Staples, Hasps, Hooks and				Calif.....	
Draw Cut, No. 4..... " 16 50		Staples, and Hooks and				Fuller's, per doz. . . \$2 00 to \$2 50	
Henry's Pat 0..... 01 14 012		Staples..... 50&10%				Tyler's Safety, per doz. 1 85 to 2 40	
Per doz. \$1 40 2 10 2 90 2 80		Extra heavy..... 35%				Carroll's, per doz. . . 3 00 to 3 75	
Star..... per doz. \$4 00		STEELYARD.				Hoosier, per doz. . . 3 50 to 4 60	
Sheep—No. BBA.		Discount 25%.				Shaw Perfected..... 3 00 to 3 75	
Inches..... 6 6 1/2 7		STONES.				WEIGHTS.	
Reg. Grip..... \$11 25 11 50 12 00		Axe.				Hitching..... per lb. Nets	
Nar. Grip, doz..... 11 00 11 25 12 25		Hindustan..... per lb. New Nets				Sash—f.o.b. Chicago	
Star..... 60%		More Grit..... " "				Ton lots, per ton..... \$52 00	
Tinners'—See Snips.		Washita..... " "				Smaller lots, per ton..... 54 00	
SHEAVES, SLIDING DOOR.		Emery.				WHEEL BARROWS.	
Common.		No. 126..... per doz. New Nets				No. 4 Tubular Steel..... @ \$8 00	
Inches..... 3 4 5		Oil—Mounted.				Common Tray or Stave Tray @ 2 50	
Per set..... \$1 40 1 75 2 40		Arkansas Hard No. 7 per doz. New Nets				Angle leg, garden..... @ 4 50	
Half fields.....		Arkansas Soft..... " "				WHEELS.	
Per set..... \$1 80 2 10 2 75 4 25		Washita No. 717..... " "				Carborundum..... 50%	
SHELLS—See Ammunition.		Oil—Unmounted.				Emery..... 60%	
SHELLERS, CORN.		Arkansas Hard..... per lb. New Nets				Well, Ins..... 8 10 12	
Union..... per doz. \$6 75		Arkansas Soft..... " "				Per doz..... \$5 50 7 25 8 50	
SHIELDS.		Lily White..... " "				12 in. heavy hoisting, per doz. \$25 00	
Expansion Bolt Shields..... 60%		Queer Creek..... " "				WIRE.	
SHOES.		Washita..... " "				Brass.....	
Conductor..... 60%		Scythe.				In coils..... Nets	
SHOT—See Ammunition.		Black Diamond..... per gro. New Nets				In 1-lb. spools, new list..... Nets	
SHOVELS AND SPADES.		Crescent..... " "				Broom—Tinned..... Nets	
Coal.		Green Mountain..... " "				Cable—Same price as Barbed Wire.	
No. 2, Woodford..... per doz. \$5 50		LaMoille..... " "				Copper.	
No. 182..... 6 00		Extra Quinnebog..... " "				In coils..... Nets	
Ames', new list..... Discount, 12 1/2%		Red End..... " "				1-lb. spools, new list..... Nets	
Neverbreak, hollow bck, blk. Nets		STOPS, BENCH.				Fence—Smooth..... An'eal'd Galv'd	
National..... " "		Hotchkiss'..... per doz. New Nets				Nos. 6 to 9, less than	
Buckeye..... " "		Stearns'..... " "				car, per 100 lbs. . . \$4 25 \$4 95	
Mohawk..... " "		STOPPERS, FLUE.				Hair—New List..... 40&10%	
Bar Drain & Ditching		Common..... per doz. \$1 10				Market.	
Twan's Perfection..... \$30 00		Gem, flat, No. 3..... " 1 00				Bright, full bdes..... "	
Railroad, etc.		Gem, No. 1..... " 1 10				Bright, broken bdes..... "	
Black Diamond..... per doz. Net		STOVE PIPE—See pipe.				Coppered, full bdes..... "	
Crescent..... " "		STOVE BOARDS—See Boards.				Coppered, broken bdes..... "	
Keystone..... " "		STOVE POLISH—See Polish.				Tinned, full bdes..... "	
Star..... " "		STRAPS.				Tinned, broken bdes..... "	
Hollow Back..... " "		Skate..... per doz. 85c & 1 20				Picture—In coils..... 80% @ 80&10%	
Ames', new list..... Discount, 12 1/2%		Carpet.				In 5-lb. spools..... per lb. 26c	
Snow.		Bullard's..... per doz. \$3 90				WRENCHES.	
Galvanized, with wood han-		Excelsior..... " 5 25				Acme Standard..... 50&10%	
dle, No. 56..... \$1 45		Malleable Iron..... " 70				Alligator No. 1..... 90c net	
No. 55..... 1 55		Perfection..... " 6 30				Always Ready..... 30%	
Alaska Steel.		King..... " 4 50				Agricultural..... 50&5%	
D-Handle..... per doz. \$3 50		Wire.				Ellis Adjustable..... 25%	
Long Handle..... 3 00		O. S. Elwood, No. 1 ..per doz. Nets				Malleable "S"..... per lb. 08c	
SINKS.		O. S. Elwood, No. 2..				Malleable..... 08c	
Painted, 16x24..... Net		SWIVELS.				Stillson Pipe..... 60%	
Enameled, White, 16x24.....		Malleable Iron..... per lb. \$0 10				Bemis & Call's:	
Wrought Steel.		Wrought Steel..... per gro. 4 50				Adjustable S, 15%; Adjustable S	
Painted, 16x24.....		TACKS.				Pipe, 15%; Briggs' Pattern, 10%	
SLEDGES—See Hammers.		Bill Posters' 6-oz., 25 lb. boxes,				Combination Bright..... 20%	
SNAPS, HARNESS.		per lb. 19c				Steel Handle Nut..... 20%	
Covered Spring..... Add 30%		Upholsters' 6-oz., 25-lb. boxes,				Combination Black..... 20%	
Judd's Pattern..... Add 3 1/4% to list		per lb. 20c				Merrick Pattern..... 20%	
SNATHS.		SOLDER—See Metals.				Knife Handle Pattern.	
Double Ring, Bush..... per doz. \$9 75		SPRINGS, DOOR.				No. 62, Screw Wrench, List, plus 5%	
Patent Loop, Bush..... " 10 00		Perfect.				No. 60, Steel Handle..	
Patent Loop, Grass..... " 8 75		Nos..... 2 3 4 5 6 7				WRINGERS.	
SNIPS, TINNERS'.		Per doz. 55c 60c 65c 75c 90c 1 00				No. 790, Guarantee..... per doz. \$58 00	
Clover Leaf..... 40&10%		Reliance.				No. 770, Bicycle..... " 54 00	
National..... 40&10%		Light Medium Heavy				No. 110, Domestic..... " 47 50	
Star..... 50%		Per doz. \$1 55 2 10 3 20				No. 110, Brighton..... " 43 50	
SOLDER—See Metals.		Torrey's..... per doz. 1 65				No. 740, Bicycle..... " 54 00	
SPRINGS, DOOR.						No. 22, Domestic..... " 47 50	
Perfect.						No. 22, Pioneer..... " 43 50	
Nos..... 2 3 4 5 6 7						No. 770B, Bicycle..... " 82 00	
Per doz. 55c 60c 65c 75c 90c 1 00						No. 781B Guarantee..... " 91 00	
Reliance.							
Light Medium Heavy							
Per doz. \$1 55 2 10 3 20							
Torrey's..... per doz. 1 65							

ADVERTISERS' INDEX

ALPHABETICAL LIST

Allen & Co., Inc., L. B.	57
American Sheet & Tin Plate Co.	60
American Steel & Wire Co.	65
Art Stove Co.	8
Ashton Mfg. Co.	62
Atkins & Co., E. C.	65
Berger Bros. Co.	61
Bernz, Otto.	62
Bertsch & Co.	60
Bridges, A. J.	57
Bullard & Gormley Co.	68
Burgess Soldering Furnace Co.	62
Burton Co., W. J.	62
Clark-Smith Hardware Co.	61
Clayton & Lambert Mfg. Co.	62
Cleveland Castings Pattern Co.	17
Cope-Swift Co., Inc.	17
Courtright Metal Roofing Co.	61
Dalley, Harry S.	57
Dearborn Steel and Iron Co.	1
Delta File Works.	65
Dreis & Krump Mfg. Co.	60
Forest City Fdy. & Mfg. Co.	6
Friedley-Voshardt Co.	61
Globe Stove & Range Co.	5
Harrington & King Perforating Co.	61
Hart & Cooley Co.	17
Haynes.	17
Haynes-Langenberg Mfg. Co.	2
Heller Bros. Co.	65
Hemp & Co.	60
Henry-Miller Foundry Co.	3
Hess-Snyder Co.	9
Hussey & Co., C. G.	60
Hyfield Mfg. Co.	64
Inland Steel Co.	67
Johnson's Arms & Cycle Works, Iver.	64
Kimball Bros. Co.	57
Lufkin Rule Co.	62
Mahoning Foundry Co.	2
Meyer & Bro. Co. F.	13
Meyer Furnace Co.	18
Michigan Safety Furnace Pipe Co.	14
Milwaukee Corrugating Co.	67
Monroe Fdy. & Furnace Co.	9
National Association of S. M. C.	59
National School of Pattern Drafting.	57
Niagara Machine & Tool Works.	60
Nickel Plate Stove Polish Co.	17
Peck, H. E.	57
Peerless Foundry Co.	9
Quincy Pattern Co.	17
Ringen Stove Co.	4
Rock Island Mfg. Co.	65
Roesch, Geo. E.	57
Schill Bros. Co.	8
Schwab & Sons Co., R. J.	4
Standard Furnace & Supply Co.	12
Standard Heating Co.	11
Standard Ventilator Co.	61
Stearns Register Co.	15
Stover Mfg. & Engine Co.	65
Sullivan-Geiger Co.	17
Thatcher Furnace Co.	11
Tubular Heat. & Vent. Co.	11
XXth Century Heat. & Vent. Co.	11
Utica Heater Co.	7
Vaughan & Bushnell Mfg. Co.	63
Vedder Pattern Works.	17
Whitaker-Glessner Co.	63
Wise Furnace Co.	12
Wrought Iron Range Co.	10

CLASSIFIED INDEX

Accessories—Automobile.

Rock Island Mfg. Co.,
Rock Island, Ill.

Bale Ties.

American Steel & Wire Co.,
Chicago, Ill.

Bicycles.

Johnson's Arms & Cycle Works,
Iver, Fitchburg, Mass.

Brakes—Cornice.

Bertsch & Co.,
Cambridge City, Ind.

Dreis & Krump Mfg. Co.,
Chicago, Ill.

Niagara Machine & Tool Works,
Buffalo, N. Y.

Brass and Cropper.

Hussey & Co., C. G.,
Pittsburgh, Pa.

Ceiling—Metal.

Burton Co., W. J., Detroit, Mich.

Friedley-Voshardt Co.,
Chicago, Ill.

Milwaukee Corrugating Co.,
Milwaukee, Wis.

Whitaker-Glessner Co.,
Wheeling, W. Va.

Chisels.

Vaughan & Bushnell Mfg. Co.,
Chicago, Ill.

Cleaners—Hand.

Nickel Plate Stove Polish Co.,
Chicago, Ill.

Clips—Damper.

Stover Mfg. & Engine Co.,
Freeport, Ill.

Coppers—Soldering Gas.

Allen Co., Inc., L. B., Chicago, Ill.

Cornices.

Burton Co., W. J., Detroit, Mich.

Friedley-Voshardt Co.,
Chicago, Ill.

Milwaukee Corrugating Co.,
Milwaukee, Wis.

Cut-Offs—Rain Water.

Sullivan-Geiger Co.,
Indianapolis, Ind.

Dampers.

Stover Mfg. & Engine Co.,
Freeport, Ill.

Elevators.

Kimball Bros. Co.,
Council Bluffs, Iowa.

Enamel—Iron.

Nickel Plate Stove Polish Co.,
Chicago, Ill.

Fence Gates.

American Steel & Wire Co.,
Chicago, Ill.

Files.

Delta File Wks., Philadelphia, Pa.
Heller Bros. Co., Newark, N. J.

Filter—Cistern.

Bridges, A. J., Bedford, Iowa.

Flux—Aluminum.

Roesch, Geo. E., Aurora, Ill.

Flux—Soldering.

Allen Co., Inc., L. B., Chicago, Ill.

Furnaces—Soldering.

Ashton Mfg. Co., Newark, N. J.

Bernz, Otto, Newark, New Jersey.

Burgess Soldering Furnace Co.,
Columbus, Ohio.

Clayton & Lambert Mfg. Co.,
Detroit, Mich.

Ringen Stove Co., St. Louis, Mo.

Hammers.

Atkins & Co., E. C.,
Indianapolis, Ind.

Vaughan & Bushnell Mfg. Co.,
Chicago, Ill.

Handles—Boiler.

Berger Bros. Co.,
Philadelphia, Pa.

Heaters—School Room.

Globe Stove & Range Co.,
Kokomo, Ind.

Haynes-Langenberg Mfg. Co.,
St. Louis, Mo.

Meyer Furnace Co., Peoria, Ill.

Monroe Fdry. & Furnace Co.,
Monroe, Mich.

Peerless Foundry Co.,
Indianapolis, Ind.

Standard Furnace & Supply Co.,
Omaha, Neb.

Standard Heating Co.,
Chicago, Ill.

Heaters—Warm Air.

Art Stove Co., Detroit-Chicago

Forest City Fdy. & Mfg. Co.,
Cleveland, Ohio.

Globe Stove & Range Co.,
Kokomo, Ind.

Haynes-Langenberg Mfg. Co.,
St. Louis, Mo.

Henry-Miller Foundry Co.,
Cleveland, Ohio.

Hess-Snyder Co., Massillon, Ohio.

Mahoning Foundry Co.,
Youngstown, Ohio.

Meyer Furnace Co., Peoria, Ill.

Monroe Fdy. & Furnace Co.,
Monroe, Mich.

Peerless Foundry Co.,
Indianapolis, Ind.

Schill Bros. Co., Crestline, Ohio.

Schwab & Sons Co., R. J.,
Milwaukee, Wis.

Standard Furnace & Supply Co.,
Omaha, Neb.

Standard Heating Co.,
Chicago, Ill.

Thatcher Furnace Co.,
Chicago-New York.

Tubular Heating & Ventilating
Co., Philadelphia, Pa.

XXth Century Heating & Ventila-
ting Co., Akron, Ohio.

Utica Heater Co., Chicago-New York

Wise Furnace Co., Akron, Ohio.

Wrought Iron Range Co.,
St. Louis, Mo.

Horse Shoes.

American Steel & Wire Co.,
Chicago, Ill.

Humidifiers.

Haynes, Kansas City, Mo.

Jobbers—Hardware.

Bullard & Gormley Co.,
Chicago, Ill.

Clark-Smith Hdw. Co., Peoria, Ill.

Lath—Expanded Metal.

Milwaukee Corrugating Co.,
Milwaukee, Wis.

Machinery—Culvert.

Bertsch & Co.,
Cambridge City, Ind.

Machines—Crimping.

Bertsch & Co.,
Cambridge City, Ind.

Niagara Machine & Tool Wks.,
Buffalo, N. Y.

Machines—Razor Blade.

Hyfield Mfg. Co., New York, N. Y.

Machines—Sheet Metal.

Bertsch & Co.,
Cambridge City, Ind.

Dreis & Krump Mfg. Co.,
Chicago, Ill.

Niagara Machine & Tool Wks.,
Buffalo, N. Y.

Machines—Stove Pipe.

Hemp & Co., St. Louis, Mo.

Metals—Perforated.

Harrington & King Perforating
Co., Chicago, Ill.

Milers.

Friedley-Voshardt Co.,
Chicago, Ill.

Motorcycles.

Johnson's Arms & Cycle Works,
Iver, Fitchburg, Mass.

Nails—Slatting.

Hussey & Co., C. G.,
Pittsburgh, Pa.

Nails—Wire.

American Steel & Wire Co.,
Chicago, Ill.

Ornaments—Sheet Metal.

Friedley-Voshardt Co.,
Chicago, Ill.

Patterns—Stove.

Cleveland Castings Pattern Co.,
Cleveland, Ohio.

Cope-Swift Co., Inc., Detroit, Mich.

Quincy Pattern Co., Quincy, Ill.

Vedder Pattern Wks., Troy, N. Y.

Pipe and Fittings—Furnace.

Henry-Miller Fdry. Co.,
Cleveland, Ohio.
Meyer & Bro. Co., F., Peoria, Ill.
Michigan Safety Furnace Pipe
Co., Detroit, Mich.
Standard Furnace & Supply Co.,
Omaha, Neb.
Stearns Register Co.,
Detroit, Mich.

Pipe and Fittings—Stove.

Hemp & Co., St. Louis, Mo.
Meyer & Bro. Co., F., Peoria, Ill.
Michigan Safety Furnace Pipe
Co., Detroit, Mich.
Sullivan-Geiger Co.,
Indianapolis, Ind.
Whitaker-Glessner Co.,
Wheeling, W. Va.

Pipe—Conductor.

Berger Bros. Co.,
Philadelphia, Pa.
Burton Co., W. J., Detroit, Mich.
Clark-Smith Hdw. Co., Peoria, Ill.
Friedley-Voshardt Co.,
Chicago, Ill.
Hussey & Co., C. G.,
Pittsburgh, Pa.
Whitaker-Glessner Co.,
Wheeling, W. Va.

Polish—Metal.

Nickel Plate Stove Polish Co.,
Chicago, Ill.

Polish—Stove.

Nickel Plate Stove Polish Co.,
Chicago, Ill.

Posts—Steel Fence.

American Steel & Wire Co.,
Chicago, Ill.

Punches.

Bertsch & Co.,
Cambridge City, Ind.
Niagara Machine & Tool Wks.,
Buffalo, N. Y.

Ranges—Combination Gas and Coal.

Globe Stove & Range Co.,
Kokomo, Ind.
Ringin Stove Co.,
St. Louis, Mo.

Ranges—Electric.

Globe Stove & Range Co.,
Kokomo, Ind.

Rasps.

Delta File Wks., Philadelphia, Pa.
Heller Bros. Co.,
Newark, N. J.

Registers—Warm Air.

Hart & Cooley Co.,
New Britain, Conn.
Henry-Miller Foundry Co.,
Cleveland, Ohio.
Standard Furnace & Supply Co.,
Omaha, Neb.
Stearns Register Co.,
Detroit, Mich.

Revolvers.

Johnson's Arms & Cycle Works,
Iver, Fitchburg, Mass.

Roasters.

Whitaker-Glessner Co.,
Wheeling, W. Va.

Rolls—Forming.

Bertsch & Co.,
Cambridge City, Ind.
Niagara Machine & Tool Works,
Buffalo, N. Y.

Roofing—Iron and Steel.

American Sheet & Tin Plate Co.,
Pittsburgh, Pa.
Burton Co., W. J., Detroit, Mich.
Philadelphia, Pa.
Cortright Metal Roofing Co.,
Philadelphia, Pa.
Friedley-Voshardt Co.,
Chicago, Ill.
Inland Steel Co.,
Chicago, Ill.
Milwaukee Corrugating Co.,
Milwaukee, Wis.
Whitaker-Glessner Co.,
Wheeling, W. Va.

Rubbish Burners.

Hart & Cooley Co.,
New Britain, Conn.

Rules.

Lufkin Rule Co.,
Saginaw, Mich.

Saws.

Atkins & Co., E. C.,
Indianapolis, Ind.

Schools—

Sheet Metal Pattern Drafting.
National School of Sheet Metal
Pattern Drafting, St. Louis, Mo.

Screens—Perforated Metal.

Harrington & King Perforating
Co.,
Chicago, Ill.

Sheets—Black and Galvanized.

American Sheet & Tin Plate Co.,
Pittsburgh, Pa.
Dearborn Steel & Iron Co.,
Chicago, Ill.
Inland Steel Co.,
Chicago, Ill.
Whitaker-Glessner Co.,
Wheeling, W. Va.

Sheets—Viamera.

Inland Steel Co.,
Chicago, Ill.

Shotguns.

Johnson's Arms & Cycle Works,
Iver, Fitchburg, Mass.

Skylights.

Burton Co., W. J., Detroit, Mich.

Snips—Tinmiths'.

Niagara Machine & Tool Works,
Buffalo, N. Y.

Solder.

Allen Co., Inc., L. B.,
Chicago, Ill.

Solder—Aluminum.

Roesch, Geo. E.,
Aurora, Ill.

Soldering Iron—Self-Heating.

Allen Co., Inc., L. B., Chicago, Ill.

Soldering Supplies.

Allen Co., Inc., L. B., Chicago, Ill.

Specialties—Hardware.

Atkins & Co., E. C.,
Indianapolis, Ind.
Delta File Wks., Philadelphia, Pa.
Heller Bros. Co.,
Newark, N. J.
Hyfield Mfg. Co.,
New York, N. Y.
Lufkin Rule Co.,
Saginaw, Mich.
Rock Island Mfg. Co.,
Rock Island, Ill.
Stover Mfg. & Engine Co.,
Freeport, Ill.
Vaughan & Bushnell Mfg. Co.,
Chicago, Ill.

Statuary.

Friedley-Voshardt Co.,
Chicago, Ill.

Sticks—Soldering.

Allen Co., Inc., L. B., Chicago, Ill.

Stoves—Gasoline and Kerosene.

Ringin Stove Co.,
St. Louis, Mo.

Stoves and Ranges.

Globe Stove & Range Co.,
Kokomo, Ind.
Ringin Stove Co.,
St. Louis, Mo.
Schill Bros. Co.,
Crestline, Ohio.
Thatcher Furnace Co.,
Chicago-New York.

Stove Pipe Reducer.

Sullivan-Geiger Co.,
Indianapolis, Ind.

Tacks, Staples, Spikes.

American Steel & Wire Co.,
Chicago, Ill.

Tapes.

Lufkin Rule Co.,
Saginaw, Mich.

Tiles and Shingles—Metal.

Burton Co., W. J., Detroit, Mich.
Cortright Metal Roofing Co.,
Philadelphia, Pa.
Milwaukee Corrugating Co.,
Milwaukee, Wis.
Whitaker-Glessner Co.,
Wheeling, W. Va.

Tin—Perforated.

Harrington & King Perforating
Co.,
Chicago, Ill.

Tinplate.

American Sheet & Tin Plate Co.,
Pittsburgh, Pa.
Whitaker-Glessner Co.,
Wheeling, W. Va.

Tools—Carpenters'.

Atkins & Co., E. C.,
Indianapolis, Ind.
Lufkin Rule Co.,
Saginaw, Mich.
Vaughan & Bushnell Mfg. Co.,
Chicago, Ill.

Tools—Sheet Metal.

Bertsch & Co.,
Cambridge City, Ind.
Dreis & Krump Mfg. Co.,
Chicago, Ill.
Niagara Machine & Tool Works,
Buffalo, N. Y.

Tools—Tinmiths'.

Bertsch & Co.,
Cambridge City, Ind.
Dreis & Krump Mfg. Co.,
Chicago, Ill.
Niagara Machine & Tool Works,
Buffalo, N. Y.
Vaughan & Bushnell Mfg. Co.,
Chicago, Ill.

Torches.

Allen Co., Inc., L. B.,
Chicago, Ill.
Ashton Mfg. Co.,
Newark, N. J.
Bernz, Otto,
Newark, N. J.
Burgess Soldering Furnace Co.,
Columbus, Ohio.
Clayton & Lambert Mfg. Co.,
Detroit, Mich.

Troughs—Eaves.

Berger Bros. Co.,
Philadelphia, Pa.
Burtop Co., W. J., Detroit, Mich.
Milwaukee Corrugating Co.,
Milwaukee, Wis.
Whitaker-Glessner Co.,
Wheeling, W. Va.

Valves—Humidifier.

Haynes,
Kansas City, Mo.

Ventilators.

Berger Bros. Co.,
Philadelphia, Pa.
Friedley-Voshardt Co.,
Chicago, Ill.
Standard Ventilator Co.,
Lewisburg, Pa.

Ventilators—Ceiling.

Hart & Cooley Co.,
New Britain, Conn.

Vises.

Rock Island Mfg. Co.,
Rock Island, Ill.

Waterers—Stock.

Rock Island Mfg. Co.,
Rock Island, Ill.

¶ ADVERTISING is to-day the mightiest factor in the business world. It is an evolution of modern industrial competition. It is a business builder, with a potency that goes beyond human desire. It is something more than a "drummer" knocking at the door of the consumer—something more than mere salesmanship-on-paper. It is a positive, creative force in business. It builds factories, skyscrapers and railroads. It makes two blades of grass grow in the business world where only one grew before. It multiplies human wants and intensifies human desires. It furnishes excuse to timorous and hesitating ones for possessing the things which under former conditions they could easily get along without.

¶ Better begin to advertise at once. Every day of waiting is a day wasted.

WANTS AND SALES

For paid yearly subscribers, **AMERICAN ARTISAN AND HARDWARE RECORD** will insert under this head advertisements of not more than fifty words **WITHOUT CHARGE**. Employers wishing to secure employes, parties desiring to purchase or sell business, secure partners or to exchange, etc., will find that these pages offer excellent opportunities to satisfy their wants. Clerks and tinsmiths looking for situations will find it to their advantage to use these columns. Those who respond to these announcements please mention that they "READ THE ADVERTISEMENT IN AMERICAN ARTISAN AND HARDWARE RECORD."

BUSINESS CHANCES

For Sale or Rent—A well equipped tin shop doing a good business and lots of work on hand. Will sell on easy terms or will rent. Answer Quick, F. L. Vannatta, Bloomville, Ohio. 11-3t

For Sale—70 Fenners Metal Weather strips. Assorted sizes and C. C. and B. J. finish. \$25.00 cash. All in good condition. Boxed ready to ship. Fremont Furnace and Metal Works, Fremont, Nebraska. 12-3t

For Sale—One Ideal lawn mower; fine shape; rotary shear flander pat. Good condition; 20" grooving machine. P. S. & W. stove pipe crimp machine. Will make good price on the above items. Cole Hardware Company, Bethany, Missouri. 11-3t

For Sale—Well equipped tin and plumbing shop in town of about 1,400 in Northern Indiana. Rent reasonable and very little competition. Good outlook for business. Reason for selling, am on the road. Address E. St. John, Walkerton, Indiana. 11-3t

For Sale—Flourishing auto radiator repair business in Northeastern Ohio industrial center. Reason for selling, owner wants to go south. Address A-56, care of AMERICAN ARTISAN AND HARDWARE RECORD, 620 South Michigan Boulevard, Chicago, Illinois. 10-3t

For Sale—Old established hardware and implement business. 40 years in same building. Not a dollar of stock that won't turn at least three times a year. Fine town and best farming county in Southern Michigan. Rent very reasonable. Mortimer & Hickey, Hartford, Michigan. 10-3t

For Sale—Good clean stock of hardware in 5,000 Wisconsin city, located in a fine dairy country where farmers get their money and pay their bills promptly on the 15th of each month. Stock will run about \$9,000.00; real estate and fixtures, \$6,000.00. This business will stand close inspection. Will take in exchange good improved farm or city property. Address A-59, care of AMERICAN ARTISAN AND HARDWARE RECORD, 620 South Michigan Boulevard, Chicago, Illinois. 10-3t

For Sale—Valuable patent issued February 11, 1919, No. 1294262. This patent is on a combination ash sifter. Most convenient and efficient yet devised. It is made and designed to fit stationary in the ash pit of any size stove or range. All sifting is done in the ash pit. Write me today for full particulars. Will sell for reasonable price. Address A-60, care of AMERICAN ARTISAN AND HARDWARE RECORD, 620 South Michigan Boulevard, Chicago, Illinois. 10-3t

● For Sale—Live plumbing and heating and sheet metal shop in one of the best growing cities in Montana. County seat of 2,500. No outside competition within seventy miles. Stock and tools invoiced \$8,200. Spring prospects never looked better. Ill health compels us to sell at a sacrifice. Terms cash. Business well established. Offers splendid opportunity for increased volume for right kind of man. This opening will bear inspection. Unless you have the money and mean business, please do not waste time by writing. Address A-63, care of AMERICAN ARTISAN AND HARDWARE RECORD, 620 South Michigan Boulevard, Chicago, Illinois. 11-3t

BUSINESS CHANCES

For Sale—An old established tin shop. 13 years in business at 1711 South Broadway, St. Louis, Missouri. A. Lindauer. 11-3t

For Sale—Good second hand No. 14 Monitor cast iron furnace, less casing, made by Keith Furnace Company of Des Moines, Iowa. Will sell this at a big bargain. Please address replies to A-57, care of AMERICAN ARTISAN AND HARDWARE RECORD, 620 South Michigan Boulevard, Chicago, Illinois. 10-3t

HELP WANTED

Wanted—Tinner, one who can do furnace work and plumbing. Steady work for right man. Wages \$25.00 to \$35.00 per week. M. E. Southwick, Merville, Iowa. 12-3t

Wanted—An all around tinner and furnace man capable of doing good work. Steady work year around. State wages desired. Address Lauer Brothers, Lincoln, Illinois. 10-3t

Wanted at Once—A good all around tinner and furnace man, one who is able to do some country plumbing. Steady job and good wages. Treckers and Phillips, Odell, Illinois. 8-ufn

Wanted—A tinner who is willing to help in hardware store. Steady job for a dependable man. Send references and state salary wanted. O'Brien Brothers, Devils Lake, North Dakota. 12-3t

Wanted at Once—A man who can do all kinds of sheet metal work, plumbing, hot air, steam and hot water heating. Steady job. Married man preferred. State wages wanted. Luther E. Alkire, Hoopes-ton, Illinois. 10-3t

Wanted—First-class plumber, one who can do hot water heating and tin work in all its branches. Steady work for capable man. State wages in first letter or no attention will be paid. Address Box 156, Laurel, Nebraska. 12-2t

Wanted—Young married man who has had one or two years' experience as salesman for the hardware and grocery department of a general store, in a small town on the Wabash in Brown County. No boozers wanted. Address J. H. Means, Hersman, Illinois. 10-3t

Wanted—All around tinner and plumber; one who can also do hot air, steam and hot water heating. Steady employment the year around. Married man preferred. State full particulars about yourself and wages expected in first letter. Schaefer Hardware Company, Crystal Lake, Illinois. 12-3t

Wanted at Once—One first-class metal workman for bench work. Young man preferred who has some speed and thoroughly understands this work. Also one man who thoroughly understands radiator repair work and can do metal work. Steady for the right men. Brizee Metal Works, Twin Falls, Idaho. 12-3t

Wanted—A tinner and sheet metal worker to take charge of a shop in Eastern Montana. Must have ability and be able to handle heating and ventilating jobs. Steady employment. Address A-62, care of AMERICAN ARTISAN AND HARDWARE RECORD, 620 South Michigan Boulevard, Chicago, Illinois. 11-2t

Wanted—Young man who has had some experience in sheet metal work and eave troughing desiring to increase his knowledge of the business under a competent teacher at good wages. Country shop near Chicago, Illinois. Please address A-61, care of AMERICAN ARTISAN AND HARDWARE RECORD, 620 South Michigan Boulevard, Chicago, Illinois. 10-3t

Wanted—One first-class sheet metal worker who can do inside and outside work, including roofing, gutters, snouting and general repair work. Eight hours per day. 70 cents per hour. If you can do above work and want to come, wire. If job still open we will wire you to come. No transportation furnished. Address Box 194, Charleston, West Virginia, Kanawha County. 12-3t

Wanted—First-class tinner and draughtsman; competent to take full charge as manager of a growing manufacturing business making a specialty of farmers and feeders supplies. Man desiring a permanent position or wishing to buy an interest in the business preferred. County seat; population 12,000; eastern Nebraska. Please address replies to A-64, care of AMERICAN ARTISAN AND HARDWARE RECORD, 620 South Michigan Boulevard, Chicago, Illinois. 11-3t

HELP WANTED

Wanted—A competent tinsmith. Will pay first-class wages and guarantee steady employment. H. H. Toman, Cherokee, Iowa. 10-3t

Wanted at Once—Tinner and furnace man, one who can assist in store. Permanent position to right man. Hill and Sperbeck, Spirit Lake, Iowa. 10-3t

Wanted at Once—We have a first-class job the year around for a good combination man—a plumber and tinner. Tyler and Hallas, Salem, South Dakota. 12-3t

Wanted—An A1 tinner, plumber and steam fitter. A good steady job at good wages for the right man. Address 130 West Main Street, Montpelier, Ohio. 9-3t

Wanted at Once—A man who can do all kinds of sheet metal work, plumbing, hot air, steam and hot water heating. Steady job. \$25.00 per week. Address E. E. Nellans, Mentone, Indiana. 11-3t

Wanted—First-class tinner and furnace man, one who can do steam and hot water heating. Steady employment to right man. Randolph Hardware Company, Randolph, Wisconsin. 12-3t

Wanted at Once—A first-class sheet metal worker, plumber, hot water, steam and warm air heating man. Steady employment the year around. Married man preferred. No boozers. Begin at once. A. L. Spradling, 218 East Main Street, Hoopes-ton, Illinois. 12-3t

Wanted—Sheet metal and furnace man to take charge of shop. Opportunity to get a working interest in the business for the right man. Must be strictly sober and not more than 40 years of age. Will pay up to 65c per hour. Roell Heating & Ventilating Company, Minot, North Dakota. 12-3t

Wanted—A first-class sheet metal worker. Must be reliable and used to all kinds of work in the metal line. One used to power machines preferred. Steady work. Nebraska town. State experience and wages wanted. Address A-58, care of AMERICAN ARTISAN AND HARDWARE RECORD, 620 South Michigan Boulevard, Chicago, Illinois. 10-3t

For Sale—To those who wish to save time and money, J. W. Conchar's PRICE MAKER AND PROFIT DETERMINER is just the thing you need. This handy volume will be of the greatest value to you in regulating the list and selling prices of any article. The tables in this book are arranged to show the sold cost and the net profit and the percentage that must be added to the actual warehouse or store cost to bring the result desired. 170 pages. Cloth, \$2.00, postage prepaid. Address Daniel Stern, 620 South Michigan Boulevard, Chicago, Illinois.

SITUATION WANTED.

Wanted—Situation by a first-class sheet metal worker and furnace man. Am steady and sober and want a steady job. Address Tinner, 2241a E Street, Granite City, Illinois. 12-3t

Situation Wanted—Who wants a first-class shop foreman by April or May? I draft any patterns from blue prints. Position must be in a town of 10,000 or more population. Shop must have plenty of room and light and do first-class work. State wages in first letter. Box 145, Dodsonville, Texas. 11-3t

Situation Wanted—By a first-class tinner and furnace man, capable of taking charge of shop. Desire position with some good firm in Wisconsin or Northern Illinois. Address replies to A-65, care of AMERICAN ARTISAN AND HARDWARE RECORD, 620 South Michigan Boulevard, Chicago, Illinois. 11-3t

Situation Wanted—By a first-class sheet metal worker and furnace installer. Have had 15 years' experience. Am capable of taking charge of shop. Married. Desire to make a change at once for good reasons. Please state wages. Address A-54, care of AMERICAN ARTISAN AND HARDWARE RECORD, 620 South Michigan Boulevard, Chicago, Illinois. 10-3t

Situation wanted by an experienced hardware man. Can do plumbing, heating, electric wiring, install milking machines and do anything that comes in the hardware line. Am married and sober. Can furnish A1 references. Prefer place where work brings advancement. Address A-67, care of AMERICAN ARTISAN AND HARDWARE RECORD, 620 South Michigan Boulevard, Chicago, Illinois. 12-3t

SITUATION WANTED

Situation wanted by first-class sheet metal worker. Can do cornice work, skylights, ventilating, cupolas, general shop work and furnaces. Can also do drafting and pattern cutting. Address 207 North Pennsylvania Avenue, Mason City, Iowa. 12-3t

Situation Wanted—By a first-class sheet metal worker. Have had 20 years' experience. Am also a first-class hardware clerk. Will go anywhere. Address A-66, care of AMERICAN ARTISAN AND HARDWARE RECORD, 620 South Michigan Boulevard, Chicago, Illinois. 11-3t

Wanted—Position as plumber and tinner. Am 36 years old, single and have no bad habits. Can handle truck or auto. 21 years at plumbing and tinning. Can also wipe lead joints. Expert on furnaces and heating. I am not a would-be mechanic. A trial will convince you. State your wages in first letter. I worked at Rock Island Arsenal. If you desire a first-class workman write to Lee Balie, 1613 11th Street, Moline, Illinois. 12-3t

TINNERS' TOOLS

Wanted—An eight foot steel cornice brake. Must be in good condition. Address H. A. Ebert, Alden, Minnesota. 12-3t

For Sale—Set tinner's tools in good condition for \$175.00. Don't bother unless you really want to buy. Address W. S. Huxol, Hermann, Missouri. 10-3t

For Sale—A complete set of tinner's and plumbers tools in fair condition. Also several pipe cutters. Address Northern Hardware, Petoskey, Michigan. 11-3t

Wanted to Buy—One or two second hand small turning machines P. and G. without stand. Condition of faces not particular. One 20" bar folder. Fremont Furnace and Metal Works, Fremont, Nebraska. 12-3t

For Sale—A set of tinner's and plumbers tools, and remnant stock of material, located in one of the best towns in Southern West Virginia. In the heart of the Pocahontas coal fields. A fine opportunity for any practical mechanic who wishes to start in business. For further particulars, address M. G. Whitlow Hardware Company, Bluefield, West Virginia. 11-3t

SPECIAL NOTICES.

Special Notices are charged at the rate of \$3.00 per inch per insertion

PATENTS
HUBERT E. PECK,
Patent Attorney
622 F. St. Northwest, WASHINGTON, D. C.

WANTED

Sheet metal workers. Edison Electric Appliance Company, 5660 West Taylor Street, Chicago, Illinois. 12-1t

WANTED

Tinsmith—for general work. Metal pattern maker. Machine repair men. National Sewing Machine Company, Belvidere, Illinois. 12-1t

SPECIAL NOTICES

WANTED

Sheet metal workers. Automobile work; first class mechanics. Apply Empire Auto Specialty Company, 2909 Indiana Avenue, Chicago, Illinois. 12-1t

WANTED

Auto Radiator Repair Man. K. & L. Radiator Company, 2237 Cottage Grove Avenue, Chicago, Illinois. 12-1t

WANTED

Solderers, Tinsmiths. Apply Excelsior Motor Manufacturing & Supply Company, 1820 North Lawndale Avenue, Chicago, Illinois. 12-1t

WANTED

Sheet Metal Foremen—Must have all around experience in laying out sheet metal work and capable of handling men; also sheet metal men and helpers. Paasche Air Brush Company, 1219 West Washington Street, Chicago, Illinois. 12-1t

SALESMAN DESIRES SITUATION

Soldier recently discharged from overseas service desires position in hardware store as salesman. Have had 10 years' experience in hardware and sporting goods. Can assist in window displays, etc. At present employed, but have good reason for change. Am 29, single and strictly sober. A-1 references. For further particulars address R. L. Simmons, 905 Main Avenue, McCook, Nebraska. 10-3t

TINNERS WANTED

Country town Tinner to learn Pattern Drafting. Let us teach you how to make Barn Ventilators, Chicken troughs, Tanks, all Furnace fittings, Radiator Repairing, together with Plumbing, Steam and Hot Water Heating.

The opportunity is here—the work must be done. Our Home Study courses cover all this work. When you can swing more work to your employer, he naturally can pay you more money, and even hire more tinner's under you.

START YOURSELF—IT IS YOUR OPPORTUNITY!

Booklet and Drawings Free—Write tonight—moments bring promotion.

THE NATIONAL SCHOOL

O. W. Kothe, Prin. Founded 1910 ST. LOUIS, MO.

Aluminum Is Now Easy to Soder
Allen Aluminum Flux is the only flux that makes it easy to soder aluminum to itself or to any other metal. Sample Free.
L. B. ALLEN CO., Inc., 4555 No. Lincoln St., Chicago, Ill.

ELEVATORS
Improved, Quick and Easy-Rising
Steam, Electric and Hand Power
SEND FOR CIRCULAR
KIMBALL BROS. CO.
1031 Ninth St., Council Bluffs, Iowa
Kansas City Office,
610 Delaware St., Kansas City, Mo.

The Best Filter Made
You Cannot Afford to Use
Any Other Kind
Drop us a card and we'll
convince you.
BRIDGES. Bedford, Iowa

**ALUMINUM
SOLDER AND FLUX**
Guaranteed to work and do smooth
job with an ordinary soldering iron.
GEORGE E. ROESCH
386 New York St., Aurora, Illinois

MANUFACTURERS
You who are on the lookout for a
patent of merit, I invite you to investigate the merits of my
**COMBINED
FURNACE POKER
AND
CLINKER EXTRACTOR**
U. S. Patent, No. 1,265,303
This is a very convenient and
handy tool; I would hardly know
how to get along without it.
HARRY S. DAILEY
213 Walker Street Bellefontaine, Ohio

W.S.S.
**WAR SAVINGS STAMPS
ISSUED BY THE
UNITED STATES
GOVERNMENT**

THE NATIONAL SCHOOL
O. W. Kothe, Prin. Founded 1910 ST. LOUIS, MO.



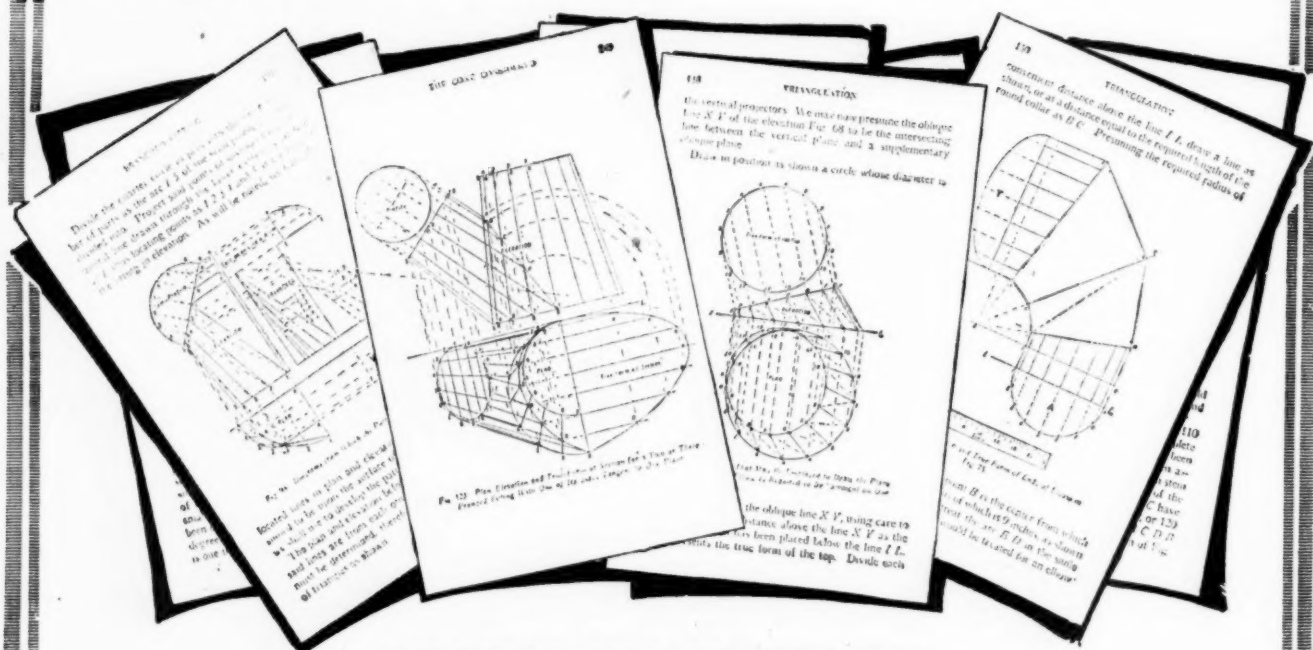
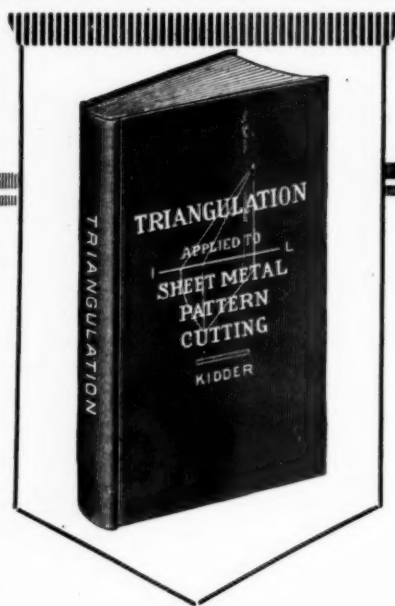
TRIANGULATION

PATTERN CUTTERS

Be Efficient

KNOW TRIANGULATION AS APPLIED TO SHEET METAL PATTERN CUTTING

Learn from this book TRIANGULATION, one of the best books on this subject ever offered to the trade. Its immense popularity is measured by the large number of buyers and users in the trade today. Because of the increased cost of materials used in making up this book the retail price has advanced to \$3.00 (in accordance with our former announcements. Note the fac-simile pages, read the descriptive matter and if you do not possess this valuable book, order a copy today.



FAC-SIMILE PAGES IN REDUCED SIZE OF TRIANGULATION APPLIED TO SHEET METAL PATTERN CUTTING.

TRIANGULATION is a book inspired by existing need. It is a consecutive treatment by one of the few practical men able and willing to give the time and labor necessary for the preparation of a thoughtful exposition designed to help the reader. The author has been prominently identified with the cutters' art for a great many years, and is at present actively engaged in a practical capacity in one of the largest and best equipped shops in the country. Therefore, the sheet metal trade comes into possession of a standard book that is purely practical and that was prepared with regard for the demands upon the cutter of today.

TRIANGULATION was, in fact, written with regard for the general progress of the pattern cutters' profession, and will be of especial value:

To those who want to acquire, to systematize or to perfect a knowledge of laying out sheet metal work, by the approved modern method. To teachers, students and beginners who want to study pattern cutting consecutively from the ground up and who would make sure of adopting the newer, simpler and more concrete methods of handling pattern problems. To sheet metal workers who take a pride in the possession of the best books for their calling.

TRIANGULATION is a complete treatise on this subject as applied to sheet metal pattern cutting; progressing from the simplest phases of the subject to the most complex problems employed in the development of sheet metal patterns; with practical solutions of problems of frequent occurrence in sheet metal shops.

This new book has 272 pages, and is illustrated with 124 engravings in line and half-tone, including many reproductions from photographs of sheet metal models made expressly for this work. Size is 6x9 inches and it is substantially bound in cloth. Price \$3.00. With AMERICAN ARTISAN one year (52 issues) \$4.25. **ORDER YOURS TODAY** and ask for a complete list of books and patterns that are of great value to sheet metal workers.

All Books Sent Postage Prepaid.

No Books Exchanged.

DANIEL STERN, Publisher and Bookseller
620 South Michigan Boulevard
Chicago, Illinois